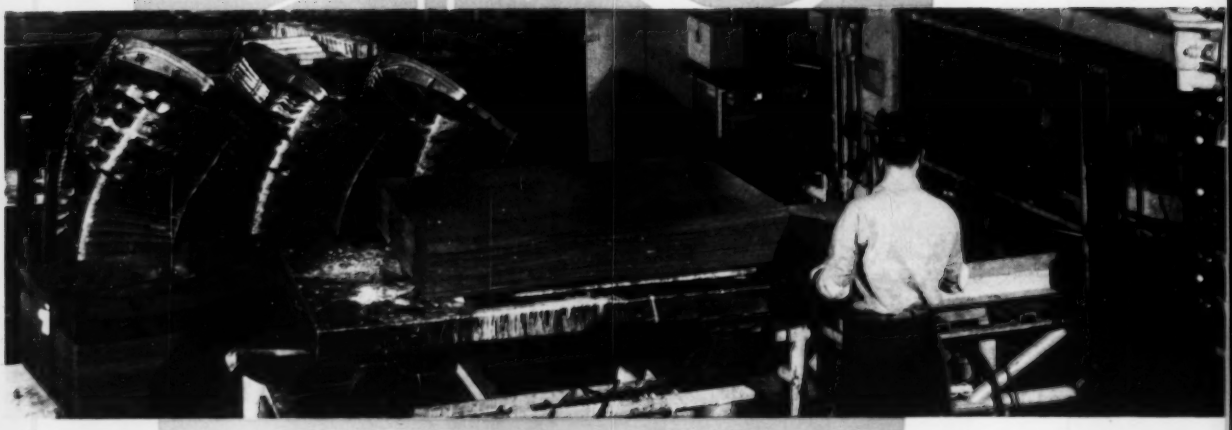
OCTOBER 21, 1957

STEEL
The Metalworking Weekly

A PENTON PUBLICATION



Steel: Record Consumption Outruns Production in '57

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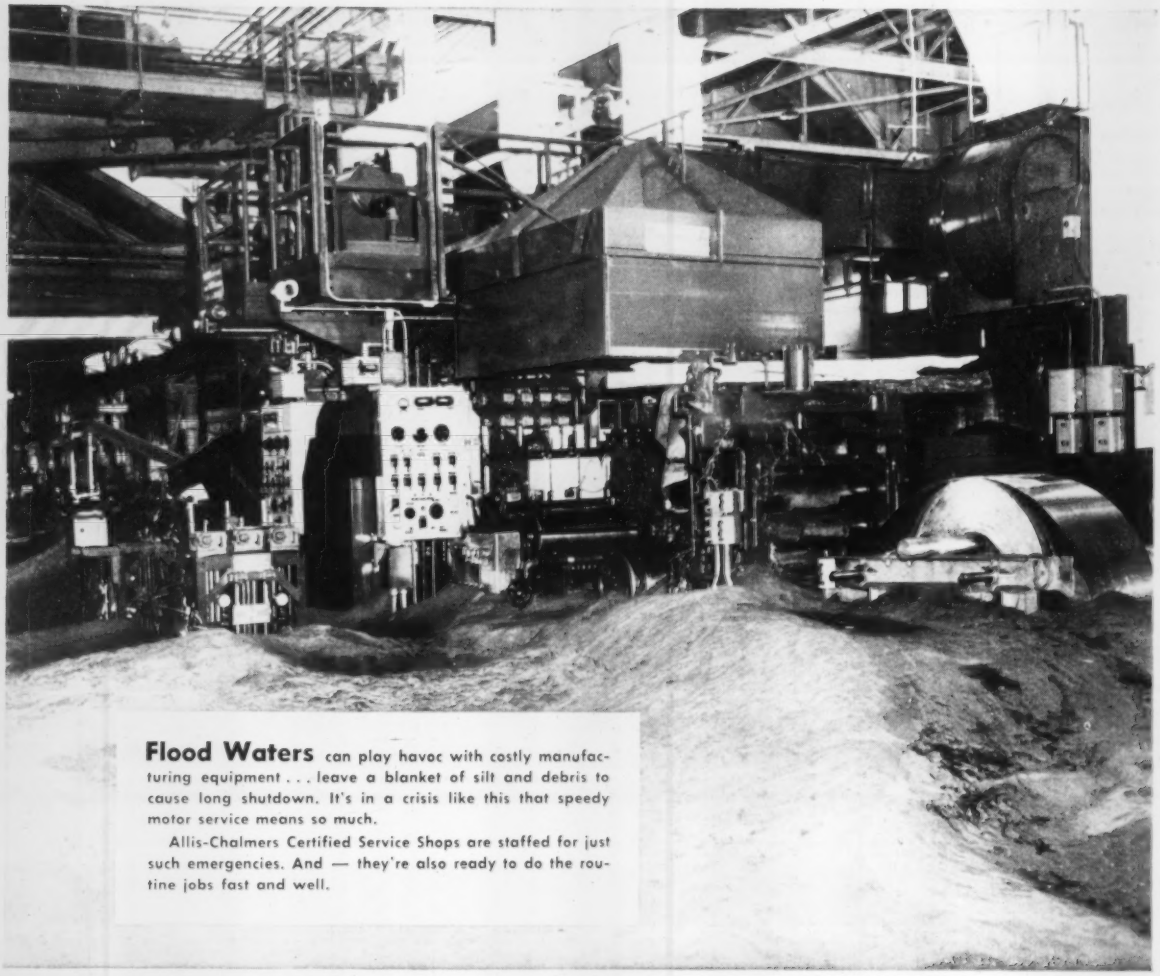
Allis-Chalmers "Certified" Service Shops:

When you need motor help



Flood Waters can play havoc with costly manufacturing equipment . . . leave a blanket of silt and debris to cause long shutdown. It's in a crisis like this that speedy motor service means so much.

Allis-Chalmers Certified Service Shops are staffed for just such emergencies. And — they're also ready to do the routine jobs fast and well.

Catastrophe or Routine Service

Whether it's complete catastrophe or a normal repair job, fast motor service can make a difference of thousands of dollars in lost production. As near as your phone is one of more than 100 Allis-Chalmers Certified Service Shops — ready to help save you production dollars.

These shops have manpower and equipment to perform repairs to Allis-Chalmers rigid standards. Their ability and integrity have been proven by years of service. They can do a good, fast job on any motor or generator, of any make. To locate the Shop in your area, call your nearby A-C district office, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wis.

ALLIS-CHALMERS

A-C ALLIS CHALMERS

A-5300

Tool Steel Topics

BETHLEHEM STEEL

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

Brake Die saves shop time in forming overlap for steel spout

The problem sounded simple enough — putting an overlap in a section of 20-gage stainless steel, which was then formed into a spout for use in meat-packaging tables. But getting a tool steel which could do the job more economically than the grade formerly used was somewhat of a challenge for the manufacturer, J. B. Dove & Sons, Inc., Philadelphia.

The answer was Bethlehem Brake Die, supplied by our local tool steel distributor, Hill-Chase & Co. Because of Brake Die's easy machinability and good wear-resistance, the new die minimized manufacturing costs. It also helped in producing a better-looking product. Said one of the Dove engineers: "We like Brake Die. It's doing a good job for us."

Brake Die, a special alloy steel, is oil-quenched and tempered to develop a fine balance of mechanical properties. It's ideal where wear-resistance, toughness, resistance to impact and good machinability are required.

Typical Analysis

Carbon 0.50	Manganese 0.90
Chromium 1.00	Molybdenum 0.20

Chances are there might be one or more applications in your shop right now where Brake Die steel could be used to good advantage. Why not talk it over with your Bethlehem tool steel distributor?

BETHLEHEM TOOL STEEL ENGINEER SAYS:

How to Shrink-Fit Tool Inserts

Shrink-fitting of tool steel inserts is a procedure which is being widely used to improve the service life of tools. Shrink-fitting is most applicable to rings and cylinders, such as are used in heading and drawing operations where the tools can be shrink-fitted into large retaining rings. The shrink-fit sets up radial compressive stress in the tool, which is available to oppose radial tensile stress set up in service, and thereby improves the performance as compared to solid tools which are not pre-stressed. Shrink-fitting of tools should be carried out as follows:

1. The retainer must be of adequate diameter and strength to provide the stresses required on the tool insert. This generally means that an alloy steel capable of hardening to approximately 300/400 BHN must be used. Shock-resisting tool steels heat treated to approximately Rockwell C 48 to 52 are used on heavy duty applications. It is recommended that the OD of the retainer be a minimum of twice the ID (preferably three times the ID).

2. A shrink-fit allowance of .003/.004 in. per in. should be provided for. This means that the OD of the insert is .003/.004 in. per in. larger than the ID of the retainer into which it must fit. These dimensions must be carefully maintained in order to obtain the benefits of shrink-fitting.

3. The OD of the insert and the ID of the retainer should have a smooth finish, preferably produced by grinding.

4. The retainer should be heated to a temperature sufficient to cause the expansion necessary to assemble the insert. Care should be exercised not to exceed the tempering temperature used in heat-treating the retainer. If necessary, the insert may be sub-zero cooled to aid in providing the clearance required for assembly.

5. After assembly of the parts, cooling of the assembly should be rapid enough to prevent over-tempering of the insert by heat transferred from the retainer.

(Advertisement)

Resistance Welding Structural Members

SCIAKY

HELPS PUT PROFIT
INTO MANUFACTURING

How Massey-Harris-Ferguson Achieves Mass Production Economy on Short Runs

Among manufacturers whose production requirements for any given part are limited, resistance welding is often regarded as an impractical method of fastening. They agree it is fine for mass production where tooling costs and setup time can be spread out over tens of thousands of parts. But for them, the cost of tooling and fixturing anything but the simplest assemblies would be uneconomical.

The Cost Research Department of Massey-Harris-Ferguson, as part of a program to reduce manufacturing costs, undertook an investigation of resistance welding. Under the direction of Mr. E. E. Hart, the investigation emphatically proved the economy and dependability of the process for a wide range of limited production assemblies.

Simplification of setup is key

The Cost Research Department reasoned that the key to the entire problem depended entirely on minimizing setup time, complete simplification of tooling and fixturing and positive dependability and consistency of the fabricating method. Mr. Hart was convinced proper resistance welding techniques would satisfy all these requirements. Subsequent developments and testing proved him right.

How the problem was solved

Basic tooling and fixturing was built right into the welder. (See Figs. 1 and 2.) The various assemblies required only the simplest tooling. Individual tooling for any assembly seldom cost as much as $75 per welding setup.

Setup time for any assembly was reduced to an average of 30 minutes. The performance of the welders themselves was carefully studied and recorded. Machine control setup for any assembly was reduced to a simple matter of the briefest reference to graphs.

Fig. 3 Typical assemblies resistance welded on Sciaky equipment at M-H-F.

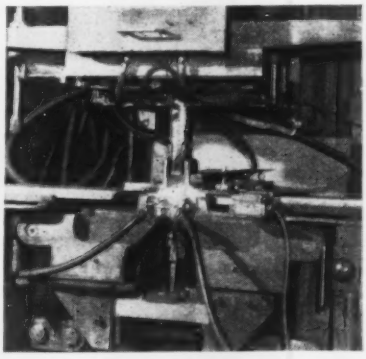


Fig. 2 Note universal fixturing table and simple dies used for welding a yoke assembly.

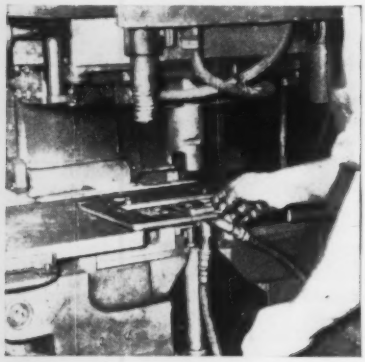


Fig. 1 Close-up of simple tooling required for a baler pick-up crank assembly.

Cost reductions achieved

The large number of assemblies fabricated by resistance welding include many structural members. Castings, forgings and arc welded assemblies have been replaced with resistance welded assemblies of standard sheet or bar stock and screw machine products.

The cost of the resistance welded part averages 10 to 40% less than similar arc welded parts. The savings in time of the welding operation itself averages 60 to 90%. Castings and forgings suffer in comparison, with savings of over a dollar per unit not unusual.

Quality welding essential

The success of such a program requires that the welders be capable of producing consistently high quality welds with maximum ease of control setup. Sciaky patented three phase welders easily meet these requirements.

Detailed information available

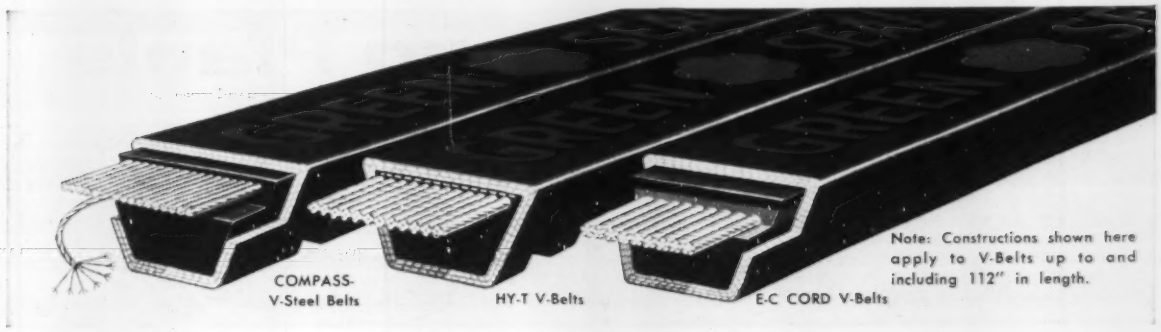
Two bulletins are available giving more complete information on the Massey-Harris-Ferguson program. "Resistance Welding at Work," Vol. 5, No. 1 (16 pages), gives data, including cost reductions, on 28 different M-H-F assemblies. An engineering report on "Design Standards" (48 pages) gives full technical data on the eight basic weld types employed. Copies of either or both bulletins are available on request.

Write today, mentioning the information you would like to receive. There is no obligation. Sciaky Bros., Inc., 4909 W. 67th St., Chicago 38, Ill. POrtsmouth 7-5600.

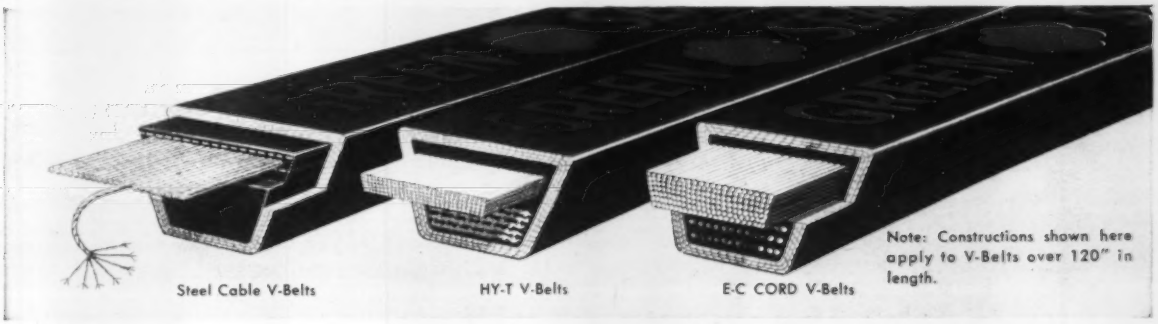
DO YOU HAVE A RESEARCH PROBLEM?

Facilities of the Sciaky Research Division at Los Angeles, California, are available for contract research to answer resistance welding problems. Housed in a 15,000 sq. ft. building, these facilities include an experienced engineering staff, a complete range of the most advanced resistance welding machines including the largest in the world and a laboratory equipped for metallography, chemistry, electronics, photography and testing as applied to resistance welding. Write for further information and ask for the 20 page Research Division brochure.

What's different about


COMPASS-
V-Steel Belts
HY-T V-Belts
E-C CORD V-Belts
Note: Constructions shown here apply to V-Belts up to and including 112" in length.

V-Belts with the Green Seal?



Plenty—when you're belting multiple drives. For that Green Seal certifies the dimensional stability of every belt that carries it. There's no surer guarantee that every belt in a set will match every other one—perfectly. And that they'll *stay* matched no matter how long you stock them before installation.

So the dimensional stability of Green Seal belts is solid protection against "loafing," slipping, stretching, scorching and other mismatching troubles. And most of the credit belongs to the belts' load carriers of airplane-type steel cables or Triple-Tempered (3-T) cord — Goodyear "exclusive" cord that's carefully tempered with Tension, Temperature and Time.

This unique 3-T process brings the synthetic cord to its point of greatest strength and stability. Result: the end of shrinkage in storage—plus greatest shock- and stretch-resistance in use. All of which assures you maximum, trouble-free horsepower hours at minimum cost. Why settle for less?

DIMENSIONALLY STABLE V-BELTS with the GREEN SEAL by GOODYEAR

THE GREATEST NAME IN RUBBER

The Goodyear Tire & Rubber Company, Dept. 794, Akron 16, Ohio

Please send me complete information on what makes V-Belts with the Green Seal different from any others made today.

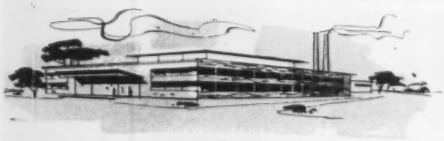
Name_____

Company_____

Street Address_____

City_____ Zone_____ State_____

Compass, E-C Cord, Hy-T, Green Seal—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

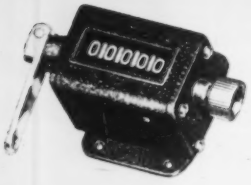


No Two Plants are alike...

but all can count on VEEDER-ROOT

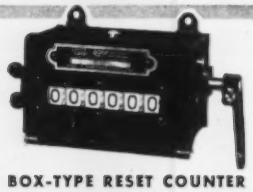
Sure, everybody's manufacturing problems are "different." But when these problems involve mechanical or electrical *Count*rol, they can *all* get the right answer from the same man . . . the Veeder-Root Distributor.

You will find that this man is tops in his field. He knows industry, and he knows how to adapt and apply standard Veeder-Root Counters to all types of production machines and processes, to give you exactly the facts-in-figures you need. If it's a question of quality, volume, cost inventory, production, wage or incentive payment, remember that *you're never sure unless you count*. And remember that the man you can always count *on* is your Veeder-Root Distributor. If you don't know who he is, just drop a line to D. G. Dresser, Veeder-Root Inc., Hartford 2, Conn.



SMALL RESET COUNTER

A compact, rugged reset counter for moderate duty in parts inspection, quality control, conveyors, machine tools, light presses, etc.
Dimensions: 1¾" long, 1 19/64" high, 1 7/16" wide.
Speed: Up to 1000 counts per minute.

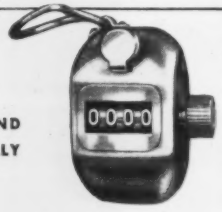


BOX-TYPE RESET COUNTER

For punch press installations, conveyors, metal-working equipment, die casting, plastic-molding, rivet, spring and wire machining, or any installation requiring a heavy duty counter.
Dimensions: 4¼" long, 2 5/32" high, 3⅜" wide.
Speed: 500 counts per minute.

RESET MAGNETIC COUNTER

For remote indication of machine operation from plant to office.
Dimensions: 3 1/16" long, 2½" high, 1⅝" wide.
Speed: Up to 1000 counts per minute.
Coils: 110V-AC are standard. Other voltages are available. Panel mounting feature also available.



HAND TALLY

For quick spot-checks of production or performance.
Dimensions: 1 17/64" long (to end of reset knob), 1¾" deep, 2" high.
Counts one for each depression of the thumb lever, and resets to zero by a turn of the knob.

CLUTCH SPEED COUNTER

For checking to make sure that the machine is operating at the required R.P.M.
Dimensions: 3¼" long, ⅞" max. diameter. Non-Reset.
Internal clutch operates counter only when rubber tip is pressed against the shaft.

Everyone can count on

VEEDER-ROOT

"The Name that Counts"

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Chicago • New York • Los Angeles
San Francisco • Montreal
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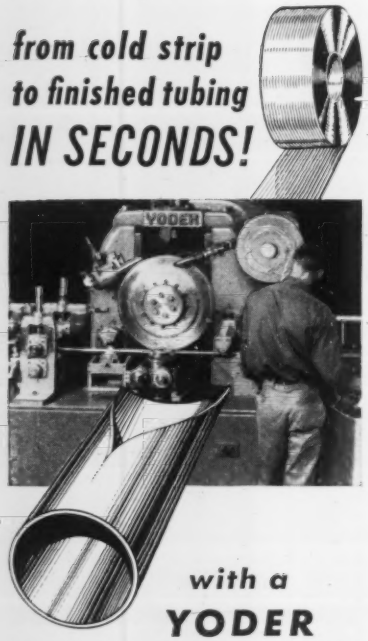
from cold strip to finished tubing IN SECONDS!



with a YODER ELECTRIC-WELD TUBE MILL

One of the fastest . . . and one of the least expensive . . . methods of making steel tubing is with a Yoder Electric-Weld Tube Mill. The Yoder method eliminates the need for time-consuming heat treatments and costly conditioning furnaces for most tube needs. Scrap losses, too, are far lower than any other method . . . usually less than 2%.

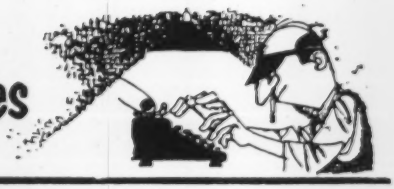
The Yoder Type-M Mill shown above is operated by one man and a helper. Coiled strip on this mill is continuously cold-roll formed, welded and cut to required lengths in a matter of seconds . . . at speeds up to 340 f.p.m. The quality of the resulting tube is *constantly* better than the requirements of commercial standards. This is one of many reasons why manufacturers and users of tubing the world over are using more Yoder mills than all other makes combined.

If your business requires pipe and tubing, ferrous or non-ferrous, in sizes from ¼-inch up to 26-inch diameter, Yoder can supply the engineering service and machines to produce it faster and better for less! For complete details, write for the Yoder Tube Mill Manual. It's yours for the asking.

THE YODER COMPANY
5502 Walworth Ave. • Cleveland 2, Ohio

ENGINEERING YODER MANUFACTURING
PIPE AND TUBE MILLS
(ferrous or non-ferrous)

behind the scenes



Senior Correspondent

Perhaps the world was too busy considering the death of George Armstrong Custer (1876) to consider the birth of STEEL's oldest editorial correspondent, Robert C. Hill, of Seattle. It seems almost incredible to contemplate, but Hill uttered his first howls in Winona, Minn., while Sitting Bull's boys were howling for other reasons farther west at the Little Big Horn.

Several weeks ago we received a communication from Mr. Hill concerning some of his misadventures, particularly a dive he took into a mess of fish. Old timers Bill Rooney and John Knox, in reply to discrete inquiries, confessed that Hill was sending market reports to *Iron Trade Review* (STEEL's original name) when they joined the organization, and for all they knew to the contrary, he might have opened the Oregon Trail.

Well, Mr. Hill's secret is out: He has thrown off the wraps. "As I recall," he writes, "it was about 1916 when John A. Penton came West to arouse interest in the American Merchant Marine. At that time, I was manager of the Seattle Merchants Exchange, so I was naturally interested in Mr. Penton's campaign. I was asked to represent the *Marine Review* (a Penton publication, later discontinued), and soon after that I took over the market reports for *Iron Trade Review*. I find this phase of my work highly interesting, and although 81 now, I hope to continue as long as my health will permit."

Mr. Hill has been a newspaperman, editor, and ship broker, and has won high Masonic honors in a long and notable career. Eighty-one years! Where were you when dust settled over the Little Big Horn? Or, more important, where will we all be when the dust of an atomic war settles? Well, don't worry about R. C. Hill; he will still be in Seattle—possibly heading up some important civic committee, with Addison Simms.

Losing Battle?

This week's cover story points an unusual situation: Steel consumption is ahead of steel production. A statement like this properly comes under the heading "How's that again?" So we'll repeat: This year, steel is being consumed faster than it is being produced. Associate Managing Editor Vance Bell explained the situation. "It's simple," he said. "People make steel. Other people use it, but there's not enough to go around. So what happens? Folks dig into inventories."

"How much inventory is laying around on any given Friday afternoon?"

"Normally, inventories consist of about three months' supply. To date (here Vance's eyes glazed as he made rapid mental calculation) about three days' supply has been eaten up."

This sort of dialog could go on for page after page, but our Linotype operators would never stand for it. Better turn to Bell's analysis of the situation (Page 111). You'll find it much more understandable.

Upside Down

You haven't had your pencil pastimes lately, have you? Well, the kids are bringing up the "ABCD goldfish" again, so let's have a variation. Certain letters in the alphabet, when turned upside down and viewed from behind look the same. "KIDDED," for example, reads the same if turned upside down and observed from the rear. You can make many words from topsy-turvy letters—and while we are about it, let's strike that silly expression from the language.

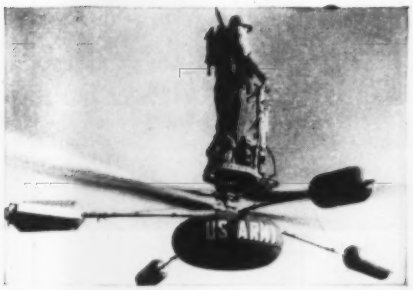
These dashes can be filled in to make a sentence, using only the letters we mentioned; or did we? They are B C D E H I K O X. Your sentence may not be the one these dashes stand for, but it must make sense.

"-----, ----," - ------, "----- --- ---!"

"- ---," ---- ------ ----, "--- ------ ---- --- ----!"

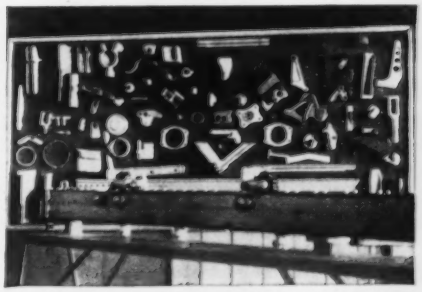
Shrdlu

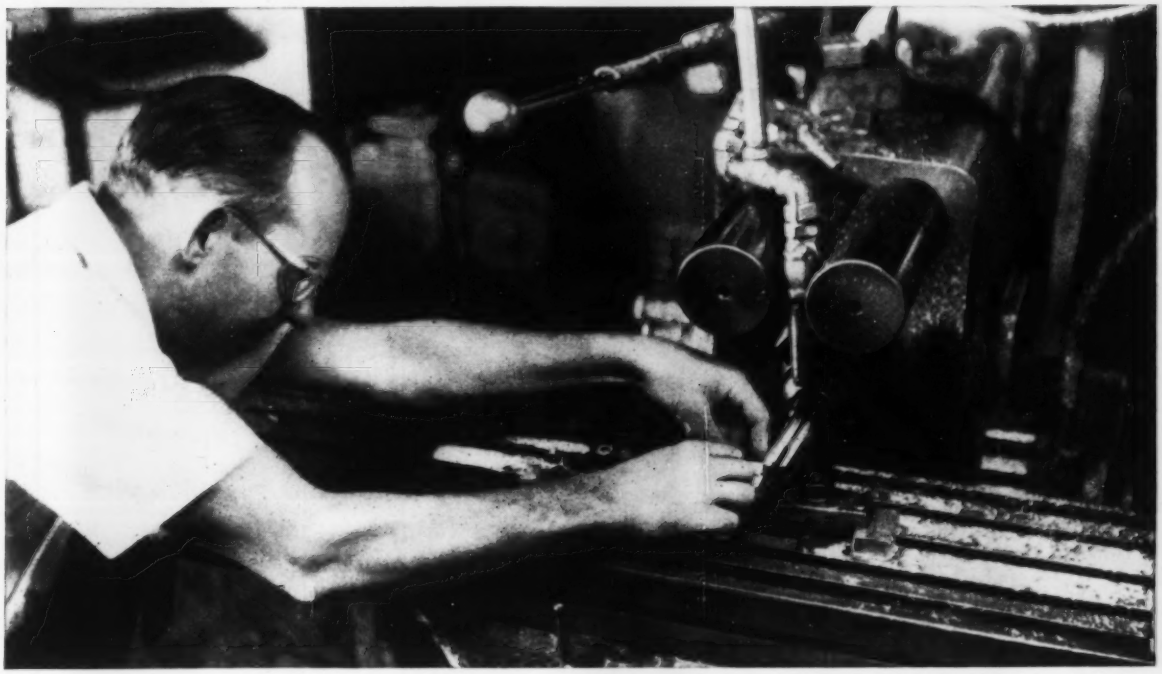
(Metalworking Outlook—Page 31)



◀ **Aerocycle,** a one-man helicopter now being tested by the U. S. Army, is one of the many aircraft for which Aeroaffiliates machines precision parts.

Some Examples of Aeroaffiliates' Work. ▶ All require fine tolerances and excellent finish. All were made with the help of Cities Service Chillo Cutting Oils.





"Fine Tolerances! Excellent Tool Life! With Cities Service Chillo Cutting Oil"

In probably no other machining operation are the tolerances so fine, the requirements so demanding as in aircraft work . . . especially when it's for the U. S. Army or Air Force.

But it is on such work that Aeroaffiliates, Inc. of Fort Worth, Texas, has become famous.

Every day, Aeroaffiliates employees must work with tolerances as fine as .0001, and their products must have an unusually good finish . . . so good that they are measured by a special gauge before the aircraft industry will accept them.

Obviously, this could play havoc with tool life . . . "but thanks to Cities Service Chillo Cutting Oils, tool life and finish are the best ever," says Aeroaffiliates. "These cutting oils are equalled only by the help we receive from the Cities Service Lubrication Engineer, a man whose knowledge and help we greatly value."

Whatever *your* type of machining operation, there's a Cities Service cutting oil tailored precisely for it . . . and a Cities Service Lubrication Engineer to help you choose it. Call him in this week. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

THE OLD GRIND GOT YOUR GOAT?

Butt definitely, a good way to meet grinding-wheel problems is . . . head-on. Take your goat by the horn and switch to CINCINNATI (PD)° WHEELS.

They offer Positive Duplication—a remarkable achievement in precision manufacturing and quality control that can save you money . . . and increase your production.

You don't need a long gray beard to wise up to (PD) WHEELS. Through the CINCINNATI (PD) Manufacturing Process you are assured Positive Duplication of the original wheel every time you reorder. "On grade" with a CINCINNATI (PD) WHEEL means all future (PD) WHEELS will act and grind exactly alike.

Yet CINCINNATI (PD) WHEELS are priced no higher than ordinary wheels.

Grinding problems will never again get your goat, if you see your Cincinnati Grinding Wheels Distributor. He'll be glad to explain how (PD) WHEELS can save you money and increase production. Or, contact us direct and we'll send one of our representatives—men who know grinding and grinding machines as well as grinding wheels. Write, wire or telephone Sales Manager, Cincinnati Milling Products Division, Cincinnati 9, Ohio.

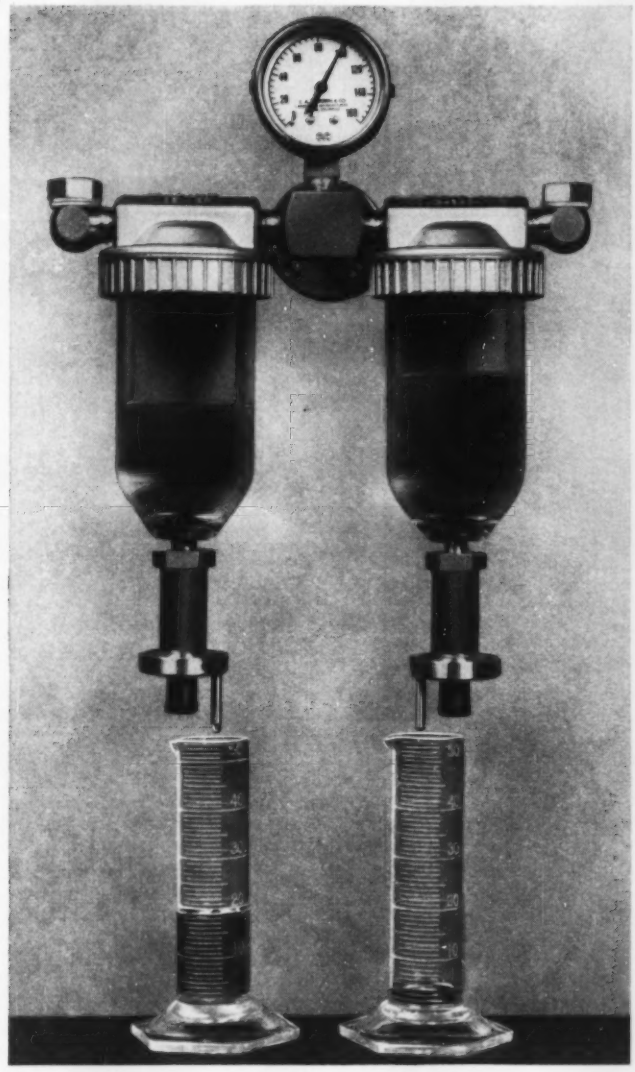
Remember—only CINCINNATI Grinding wheels give you

(PD) POSITIVE DUPLICATION

CINCINNATI°
Grinding Wheels

A PRODUCTION-PROVED PRODUCT OF THE CINCINNATI MILLING MACHINE CO.

Trade Mark Reg. U.S. Pat. Off.



ANTILEAK DEMONSTRATION

Suntac oil in one chamber, your present hydraulic oil of the same viscosity in the other. Both oils are forced out through sintered bronze bearings. In this photograph, pressure of 100 psi caused a straight mineral oil to leak out four times faster than Suntac.

SUNTAC CUTS HYDRAULIC OIL LOSS AS MUCH AS 75%

See this demonstration in your plant

Take about five minutes at your own desk to learn how Suntac® oils stay put in hydraulic systems . . . reduce oil loss through loose joints and worn fittings.

Match Suntac against the hydraulic oil you're now using—see how the exceptional non-gummy antileak characteristics of Suntac can reduce your oil losses as much as 75%. *Some users have even reported savings of 90%.*

Call Your Sun Representative

Have him arrange with a Sun Lubrication Engineer to give you and your staff a private demonstration. For further information on the uses of Suntac in hydraulic systems and in general lubrication, write to SUN OIL COMPANY, Philadelphia 3, Pa., Dept. S-10.

SUNOCO

INDUSTRIAL PRODUCTS DEPARTMENT

SUN OIL COMPANY PHILADELPHIA 3, PA.

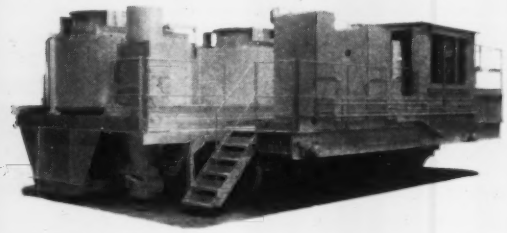
© SUN OIL CO., 1957

IN CANADA: SUN OIL COMPANY LIMITED, TORONTO AND MONTREAL

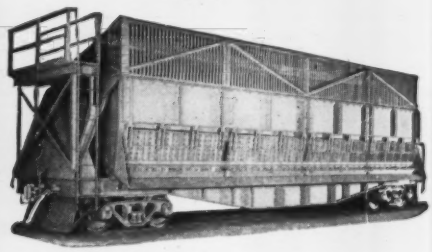
COAL TO COKE VIA ATLAS CARS

Making coke is a specialized business, and requires special equipment like the cars below. Coke plant operators prefer Atlas Cars because they are dependable.

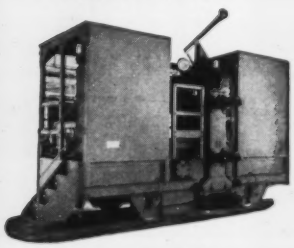
3 HOPPER COAL CHARGING CAR



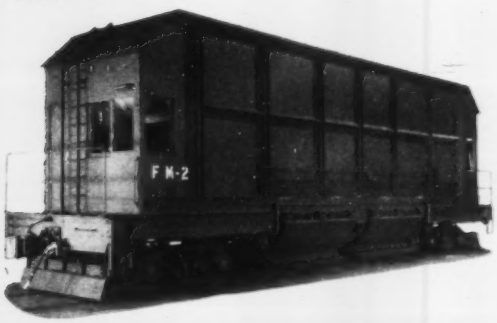
COKE QUENCHER



HYDRAULIC DOOR MACHINE



40-TON COKE TRANSFER CAR



THE ATLAS CAR & MFG. CO.

ENGINEERS MANUFACTURERS

1140 IVANHOE RD. CLEVELAND 10, OHIO, U. S. A.

LETTERS
TO THE EDITORS

Article Is Well Written

Please send ten copies of the article, "Cold Heading Copper for Economy" (Sept. 23, Page 133). We thought it was well written and feel it would be useful to us in further understanding the advantages of cold heading.

D. C. Lewis
Sales Representative
Latrobe Steel Co.
Melrose Park, Ill.

Word of Appreciation

Just a word of appreciation for the Program for Management reprints.

In the rush of business, we overlook a few of your issues but have, through your service, assurance that we will not miss any of these instructive and interesting articles.

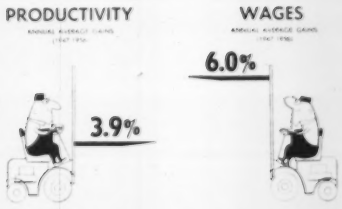
Homer F. Butler
H. F. Butler Inc.
Union, N. J.

Good Reference Material

I would appreciate an extra copy of the article, "One System Handles Many Wastes" (Sept. 16, Page 146). It is most informative and can be used for reference on similar projects.

R. F. Coltart
Sales Manager
Pacific Central Div.
Link-Belt Co.
San Francisco

Why Prices Rise



We enjoyed reading the article, "Prices Rise When Wages Outrun Productivity" (Sept. 30, Page 45). I would appreciate six copies.

J. R. Rose
Sales Manager
Midwestern Div.
Townsend Co.
LaGrange, Ill.

Would you please send a copy of this excellent article?

J. D. Cantwell
Works Manager
Trane Co.
LaCrosse, Wis.

Unlimited Copper Potential

The article, "Cold Heading Copper for Economy" (Sept. 23, Page 133), was interesting. May I have 25 reprints?

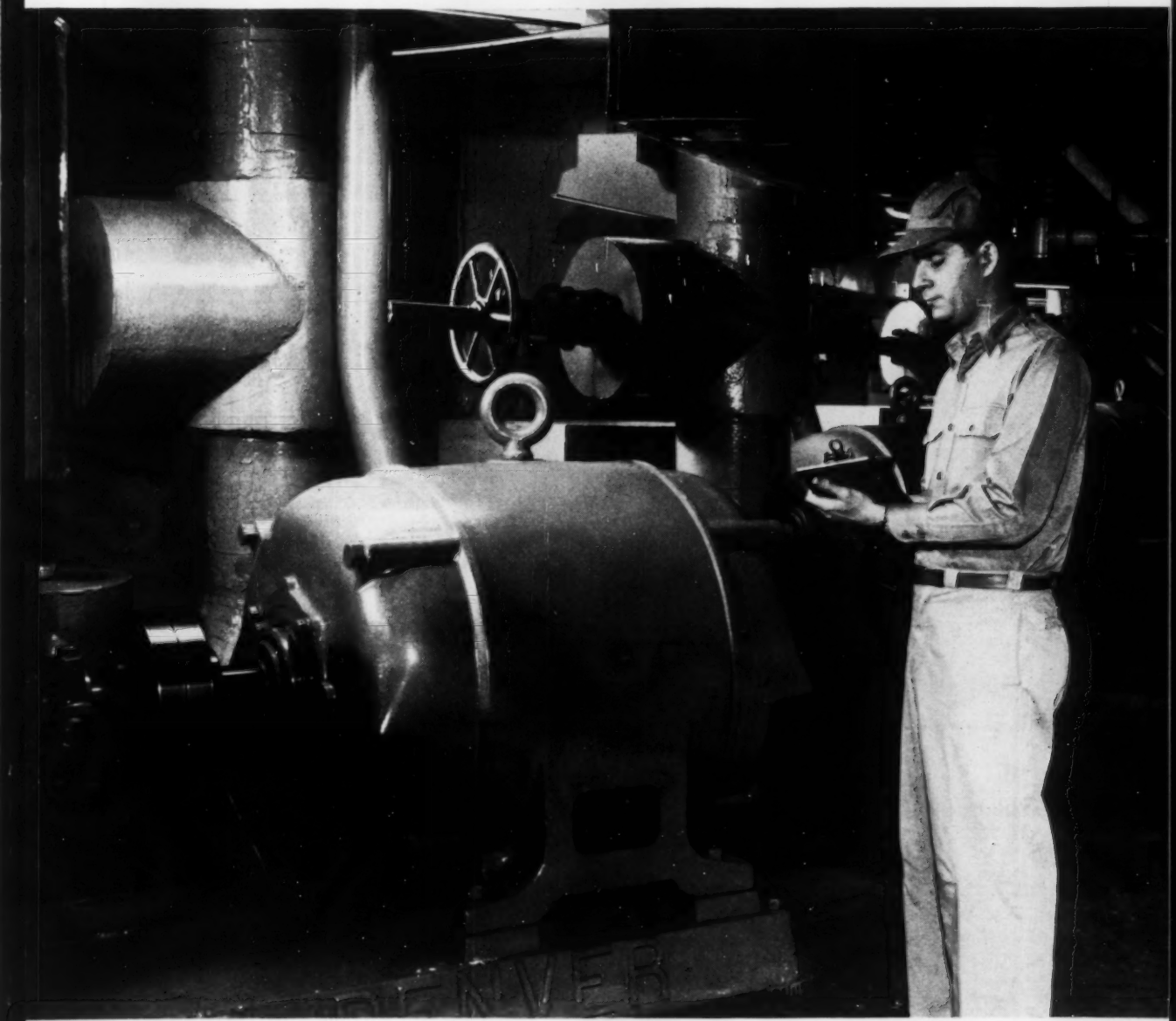
Irving M. Akins
Advertising Manager
Waterbury Farrel Foundry & Machine Co.
Waterbury, Conn.

Adapting American Ideas

As a professional engineer from the Netherlands, I recently immigrated to Canada and found a position in the management of a Montreal company. In the Sept. 16 issue, I read the ar-

(Please turn to Page 12)

. . . Your best motor investment is Century



Industrial quality: rugged design for every application

No getting around it—your motors must have real stamina to perform dependably under today's service demands. Years ago, Century decided every motor with the "C" on the bearing cap had to be *industrial* quality. *Fractionals* as well as *integrals* up to 400 HP. There could be no corner-cutting in design or manufacture.

We have never deviated from this policy. Our customers are glad of it. Every standard Century motor is built *up to the requirements of continuous industrial use*. You get these extra *performance benefits* regardless of your applications. At no extra cost.

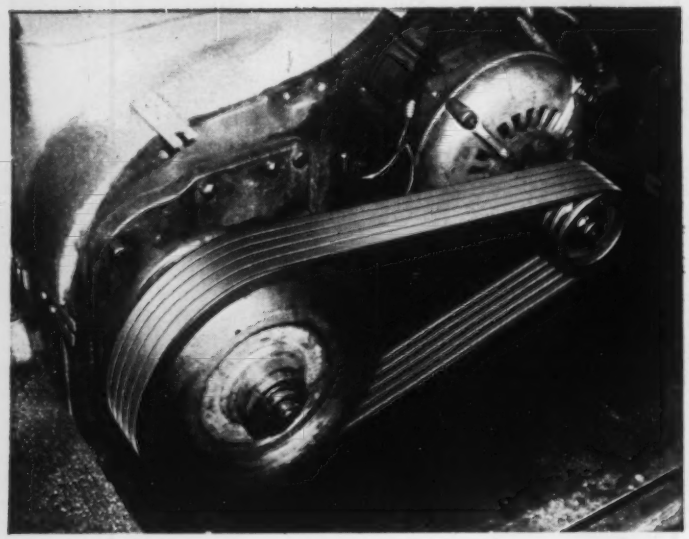
Talk it over now with your local Century man or Authorized Century Distributor. Ask him to show you why your best motor investment is Century.

Century MOTORS

CENTURY ELECTRIC COMPANY

St. Louis 3, Missouri • Offices and Stock Points in Principal Cities

CONCAVE SIDES make V-belts last longer



***See for yourself* why the concave sides (Fig. 1) of a Gates V-Belt greatly lengthen its life. Just do this:**

Bend a Gates belt and feel the sides. Note how these precisely engineered concave sides *fill out* on the bend and *become straight*. Thus a Gates belt grips the sheave groove evenly (Fig. 1-A) and wear is distributed uniformly across each side of the belt. That means longer belt life; lower costs.

Make the same test with a straight-sided belt (Fig. 2) and see what happens. The sides bulge out on the bend (Fig. 2-A) concentrating the wear at points shown by arrows.

For longer belt life...lower belt costs, specify the V-belt with Concave sides—Gates Vulco Rope...readily available from nearby distributor stocks.

World's Largest Maker of V-Belts

The Gates Rubber Company

DENVER, COLORADO

There are Gates Engineering Offices and Distributor Stocks in all industrial centers of the United States and in 70 other countries throughout the world.

Gates VULCO ROPE Drives

LETTERS

(Concluded from Page 10)

ticle, "Dealing with Workers" (Page 119), which I think is excellent (especially for me, as I have to adapt to the American way of management).

I would appreciate reprints of it as well as other Program for Management articles already published.

H. John Meyer
5417 St. Zotique Street E.
Rosemount
Montreal, Que.

Fine Color Presentation

Please forward three copies of your fine article, "How To Get More from Machine Tools" (Sept. 23 insert). The thing that impresses me is the fine color presentation of the chip conditions and charts.

K. C. Jasper
Chief Engineer
Model Engineering & Mfg. Inc.
Huntington, Ind.

This article is a useful one, and you are to be congratulated for the excellent method of presentation. If an extra copy is available, I would appreciate it for my file.

O. E. Cullen
Chief Metallurgist
Surface Combustion Corp.
Toledo, Ohio

Article Is Terrific

Just read the Program for Management article, "Research . . . Threshold to the Future" (July 15, page 93), which is terrific. This is my first contact with your management series. I would be pleased to receive copies of the six articles published to date.

R. H. Yost
Manager
Prototype Production Engineering
Remington Rand Univac
Division of Sperry Rand Corp.
Univac Park
St. Paul

Slab Grinding Information

We are interested in the article, "Mechanization Cuts Slab Grinding Costs" (Sept. 2, Page 138), and would appreciate a copy.

Joseph H. Spurgeon
Spurgeon Co.
Van Dyke, Mich.

Aids Apprentice Training

We will be pleased to have 25 copies of the article, "Beryllium Takes New Step" (Aug. 19, Page 152). We find many articles in STEEL of high instructional value in connection with our apprentice school science classes.

George M. Gourdier
Apprentice School Supervisor
Training School
San Francisco Naval Shipyard
San Francisco

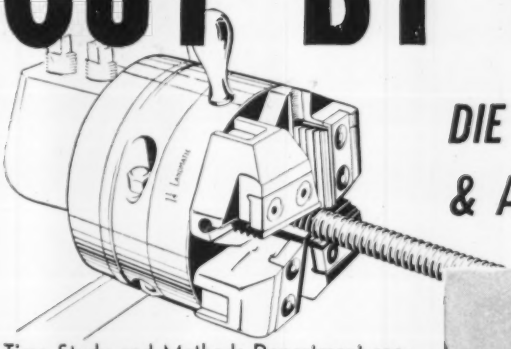
Lauds Management Series

Please send ten copies of the article, "Dealing with Workers" (Sept. 16, Page 119). It is a most excellent article, and we would like each of our foremen to have a copy.

You are to be complimented on the Program for Management series.

K. J. Battjes
Personnel Manager
George L. Nankervis Co.
Detroit

THREADING COSTS CUT BY OVER 75%



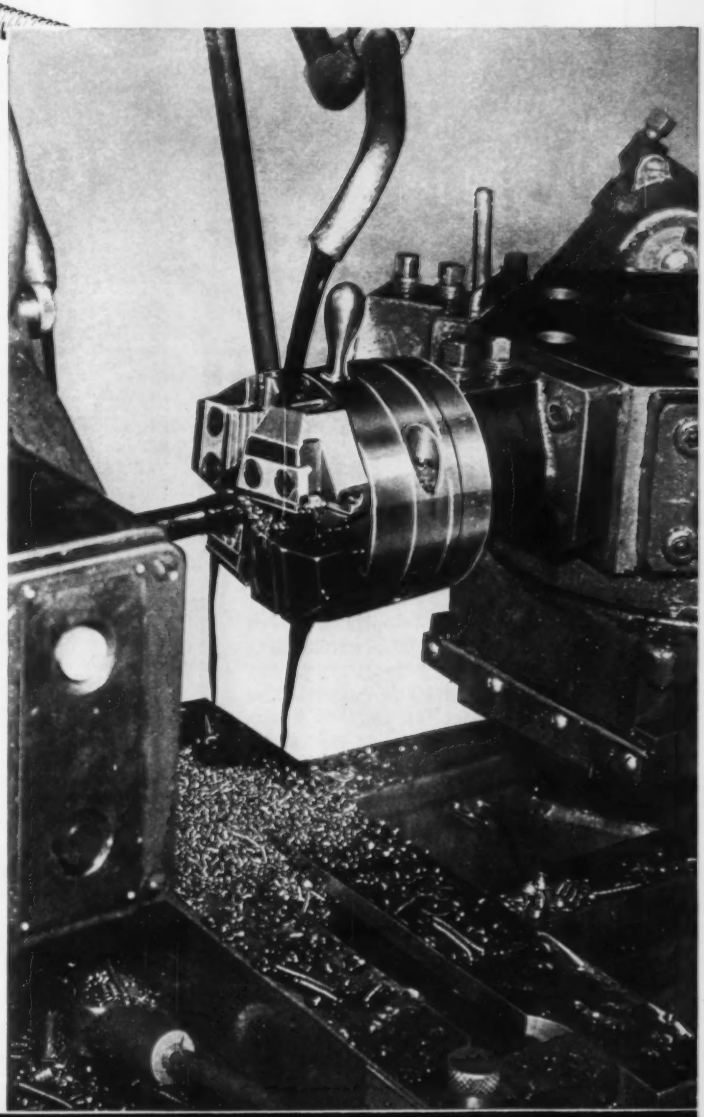
DIE HEAD CUTS COST OF PRODUCTION & ASSEMBLY OF STABILIZER SCREWS

Time Study and Methods Department records of a large aviation equipment company furnish data of still another job where LANDMATIC Heads have effected large savings in machine time and assembly and improvements in product quality.

In this operation, the 1¼" LANDMATIC Head on a turret lathe equipped with Leadscrew is cutting a ⅝-6 Acme thread on a Stabilizer Screw used by a light aircraft manufacturer. The thread was held to the close tolerance of ±.001 between the P.D. of the thread and the O.D. of the screw, for a full thread length of 5⅜" on cold-drawn piston stock, Spec. #AISI, B1112.

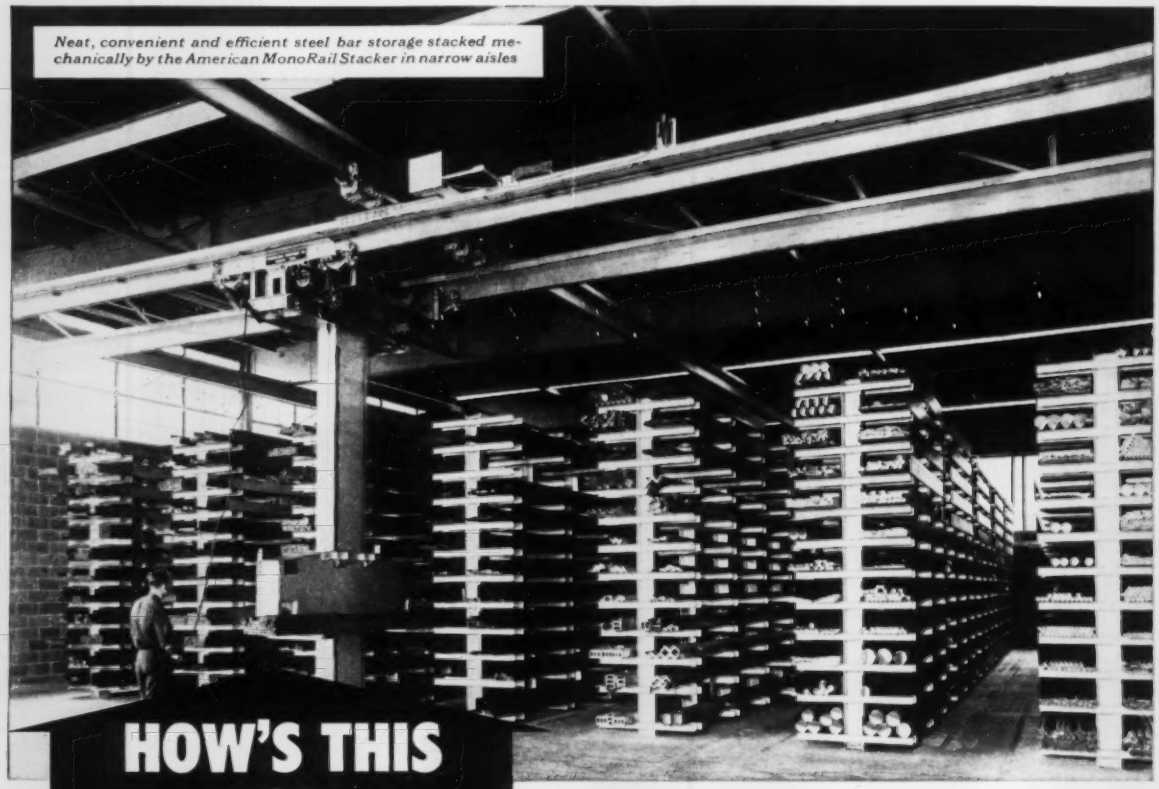
Former methods required two passes to produce the finished thread—one roughing and one finishing cut. The thread is now cut in one pass in .192 at a spindle speed of 230 R.P.M. Approximately 3500 pieces are cut between chaser grinds. Hand fitting with the mating nut in assembly, previously necessary, has been eliminated. Total cost savings in all operations are in excess of 75%.

LANDMATIC Heads are stationary threading heads with self-opening action designed primarily for turret lathes. Their unusually-large oversize capacity makes them ideally suited for these machines. For detailed information and specifications, write for Bulletins F-80 and F-90.



LANDIS Machine COMPANY
WAYNESBORO, PENNA

THREADING MACHINERY—THREAD CUTTING DIE HEADS—COLLAPSIBLE TAPS

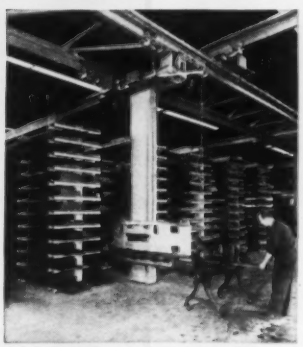


Neat, convenient and efficient steel bar storage stacked mechanically by the American MonoRail Stacker in narrow aisles

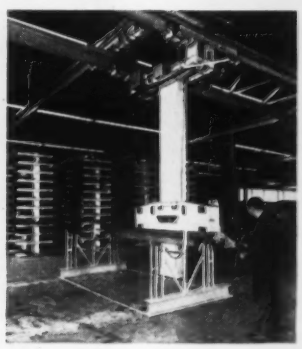
HOW'S THIS FOR STEEL STORAGE!

American MonoRail engineers, working with Hawkridge Brothers Company, designed this system for storing bars, rods and other long steel shapes.

Note the extremely narrow aisles and maximum height of racks. Bars and rods, 20-22 feet long, are placed in pans 18 feet long. The American MonoRail Stacker transfers these pans to either side of an aisle for storage.



MonoRail Stacker forks support bar in saw. Saw with extension rolls to any convenient spot in the warehouse.



American MonoRail Stacker lowers a banded bundle of bars over prongs which ingeniously splits bands, lets bars roll into trough for pick-up in a tray.

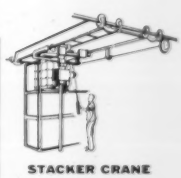
Photos: Courtesy of Hawkridge Brothers Company, Waterbury, Conn.

Member of Materials Handling Institute - MonoRail Association

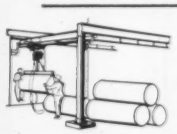
AMERICAN
MONORAIL
COMPANY

13102 ATHENS AVENUE, CLEVELAND 7, OHIO (IN CANADA—CANADIAN MONORAIL CO., LTD., GALT, ONT.)

AUTOMATIC DISPATCHER



STACKER CRANE



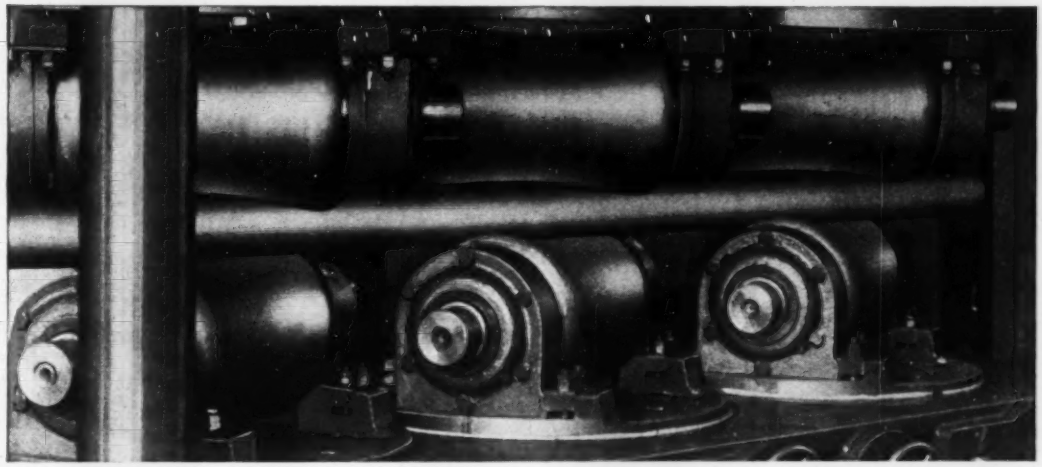
MANUAL MONORAIL

RETRACTABLE CRANE

TIPS FROM A ROLL MAKER'S NOTEBOOK

MACKINTOSH-HEMPHILL DIVISION, E. W. BLISS COMPANY, Pittsburgh 3, Pennsylvania

Cast mill rolls • Johnston cinder pots • rotary tube straighteners • end-thrust bearings • heavy-duty lathes • steel and special alloy castings



Line contact of rolls and tubing is shown clearly in this photograph of a tube length passing through the rolls of a Mack-Hemp rotary tube straightener.

Odd twists on roll wear in rotary tube straighteners

The production straightening of pipe and tube by passing it between concave cross rolls is quite unique in the demands it places on the rolls. For example, slippage – the bane of most rolling operations – is a necessity in a rotary tube straightener. Without slippage, the straightened tube will show spiral markings.

An unattainable goal—Another unusual characteristic of this service is that when properly set, the rolls should wear evenly over their entire work surfaces. This is because the tubing makes a line contact with the roll surface. Thus, under ideal conditions, straightener rolls would operate continuously to worn-out diameter without any redressing at all.

Unfortunately, it is impossible to achieve this ideal. Any given straightener is usually designed to be used with a range of tube diameters. Hence, roll curvature must be for average diameter, a compromise.

First rolls used were "overspecified"—Mack-Hemp engineers have made a very thorough study of straightener rolls—Mack-Hemp itself builds a type of rotary tube straightener. At first, we believed that hard forged steel roll rings on forged steel shafts would be necessary for neck strength and wear resistance, but soon learned that cast steel rings gave longer life. As time went on, we used integral cast steel rolls for economy. Then cast iron rings on forged steel shafts proved best for wear and finally we found solid cast iron rolls to be sufficiently strong and most economical.

Solid grain iron rolls best—Today, we use cast-to-shape low-alloy grain iron rolls in the larger straighteners we build, and recommend their use in most other rotary tube straighteners. (In small straighteners, hardened steel rolls are still practical because of the relatively higher cost of small chilled castings). Mack-Hemp "Technigrain" rolls have ample strength for this service. Casting to shape provides a uniform depth of hardness over the entire surface, while the graphite in the iron has the "lubricant" quality needed for slippage without excessive wear.

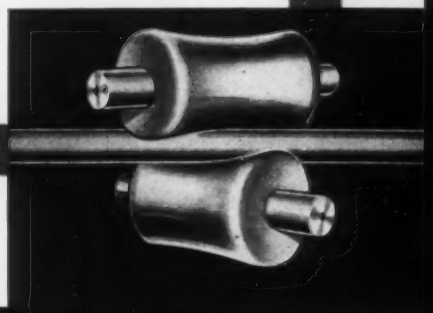
The history of tube straightener rolls shows how Mack-Hemp's broad experience in all phases of roll use can help you choose exactly the right roll. Feel free to call on us at any time . . . there's no obligation.

MACKINTOSH-HEMPHILL

You get more tonnage from the rolls with the Striped Red Wabblers

Division of E. W. BLISS COMPANY

Presses, Rolling Mills, Special Machinery



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Dine in the splendid old world setting of a grand dining room. The menu is varied, the service unexcelled.

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One of the brightest of the city's supper clubs. Dancing nightly from 9:00 p.m.
Air conditioned, of course.

Rib Room
A true specialty restaurant
For Fabulous Roast Beef, roasted, carved and served to your order.

MEN'S BAR
Strictly stag — is this all male haven for good drinks, good food and good talk.
Plus sports events on TV.

TRANSIT BAR
For *rapid* service in the most unique bar in the country . . decorated with an outstanding collection of miniature trains.

the PATIO
Pause — in the relaxing, informal atmosphere of the gayly decorated Patio. It's a Cleveland habit to say — "Meet me at the Patio."

Coffee Shop
Service is brisk and decor cheerful in the modern, air-conditioned coffee shop. Enjoy a tasty sandwich or a moderately priced meal.

Hotel Cleveland
CLEVELAND, OHIO

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Industrial heavy service, cab operated Multiple Runway Crane spans 100 feet in an appliance plant. ASCE rail on bridge and runways for high speed and heavy service.

Industrial

Multiple runway cranes provide crane coverage over widest bays

If you are planning an extra wide shop bay requiring overhead crane service and still want to keep floor areas clear of supporting pillars, *Industrial's* Multiple Runway Crane will fill the bill. Multiple runways allow minimum depth and weight of crane bridge and eliminate intermediate supporting pillars even on extremely long spans. This member of the versatile *Industrial* crane family is ideal for warehouse or similar application where wide, unobstructed floor space is at a premium.

Trouble-free service is built into *Industrial* Multiple Runway Cranes with engineering features proved superior in *Industrial* standard high quality underhung cranes:

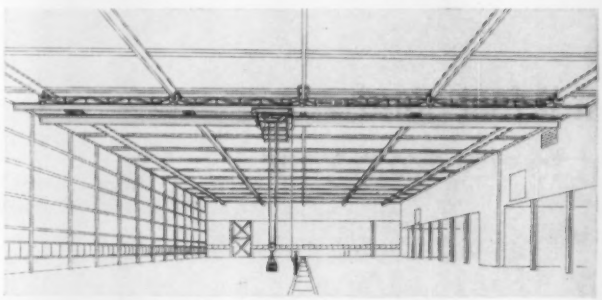
- Forged steel heat treated wheels.*
- Patented removable axles.
- Flexible couplings throughout.
- Gear drive enclosed in oil bath.
- Jig-assembled and jig-bored end trucks with large gusset plates for perfect alignment.
- Precision ball and roller bearings.
- Channel or truss type outrigger standard equipment for extra support.

*All driver wheels are heat treated for extra wear.

Industrial Heavy Service Underhung Track Section.

This heavy service *Industrial* track combines the durability of a high carbon manganese running surface with the safety of a ductile structural I-beam load-bearing member.

One of three *Industrial* floor operated, 15 ton Multiple Runway Cranes installed in an aircraft factory. Cranes span 130 feet.



To obtain fullest economy from *Industrial's* Multiple Runway Crane in new or existing buildings consult with *Industrial* engineers. *Industrial* makes many other types of overhead and jib cranes and can recommend the type and size that will best fill your needs. Send for Catalogs.

Industrial CRANES

INGERSOLL B-W BORG-WARNER

MR1057C

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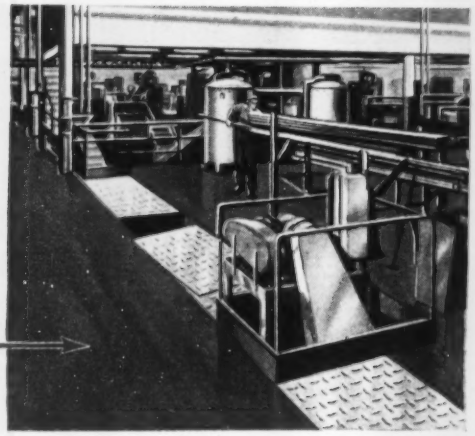
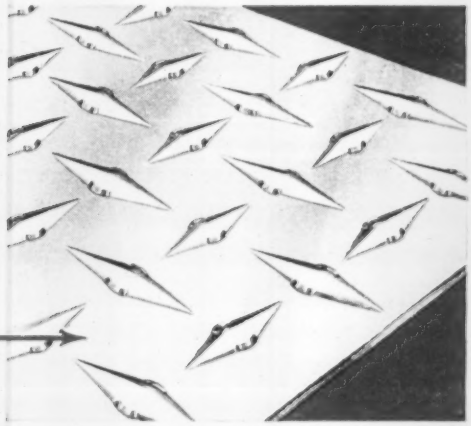
non-sparking, rustproof flooring
in areas like this...



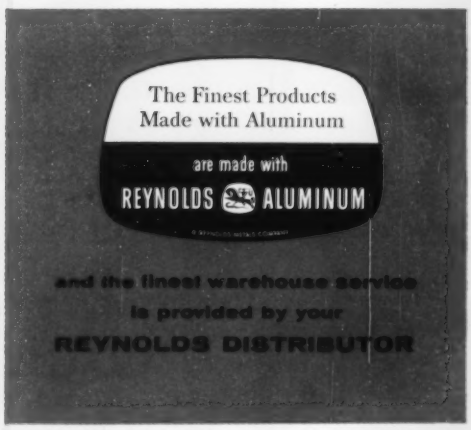
and you want
the finest quality
aluminum treadplate...



Get it fast—and
cut to size from your

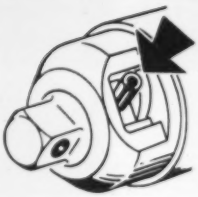
REYNOLDS DISTRIBUTOR

Look under "Aluminum" in the classified phone book for your Reynolds Distributor

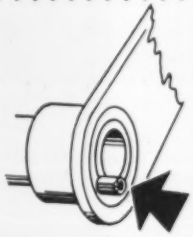


Watch Reynolds All-Family Television Program "DISNEYLAND", ABC-TV

Rollpin® replaces 12 different fasteners

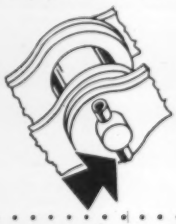


REPLACING A GROOVED PIN . . . in this application, Rollpin serves as a stop pin in a ratchet wrench adaptor. With its light weight and high shear strength, Rollpin functions perfectly . . . cuts assembly costs.



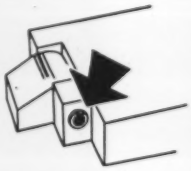
REPLACING A KEY . . . Rollpin demonstrates its ability to do away with precision tolerances, in this heating system damper arm. Faster, cheaper and more satisfactory than previous assemblies.

REPLACING A RIVET SHAFT . . . Rollpin serves as an axle for the sparkwheel of a cigarette lighter. No riveting or threading necessary . . . faster assembly. Note flush, clean fit.

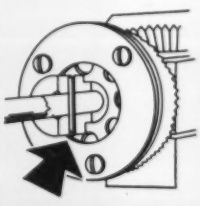


REPLACING A COTTER PIN . . . Rollpin assembly time is shorter, service life ten times longer. Vibration-proof flush fit. Easily removable.

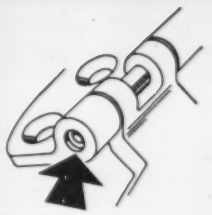
REPLACING A SET SCREW . . . to fasten automobile brake handle a short length Rollpin is self-retained in the hand grip but can easily be driven into over-drilled hole in shaft for simple handle removal.



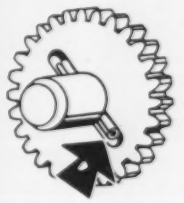
REPLACING A CLEVIS PIN . . . here Rollpin holds firmly in clevis, permits free action of moving member. Rollpin application shown is the plate of a home workshop tool.



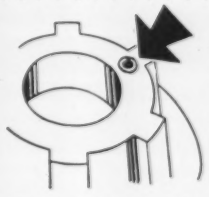
REPLACING TAPER PINS . . . in the assembly of precision differentials eliminated cost of taper pin reamers and the entire reaming operation. Rollpin costs less than a taper pin and installation is cheaper. They remove easily.



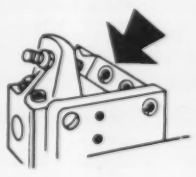
REPLACING A HEADED PIN . . . in this hinge pin application, Rollpin is simply and inexpensively driven in place, greatly reducing assembly costs. Constant spring tension holds Rollpin firmly in place . . . eliminates loosening of hinge due to wear.



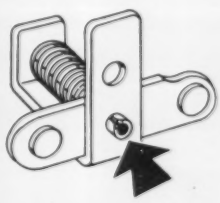
REPLACING A HUB ON A GEAR . . . Rollpin, self-retained in shaft, is simply snapped into molded slot to position sintered gear. This application, by an office equipment manufacturer, effects major savings in assembly. Rollpin's high shear strength is particularly valuable here.



REPLACING A DOWEL PIN . . . Rollpin is used here to prevent rotation of a thrust bearing. No reaming, no special locking. Easily removed. Lowest possible dowel pin cost.

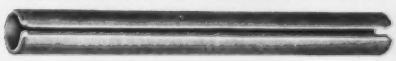


REPLACING A BOLT AND NUT . . . Rollpins act as fasteners and pivots for the linkages in this electric welder. Rollpins may be used with a free fit in outer or inner members depending upon product design requirements.



REPLACING A RIVET . . . Rollpin serves as guide shaft for spring-loaded electrical interlock contacts. This electrical equipment manufacturer reports that rivet failure previously occurred at the clinched end under normal operating impact and vibration.

WHERE CAN YOU USE THIS SIMPLE FASTENER?



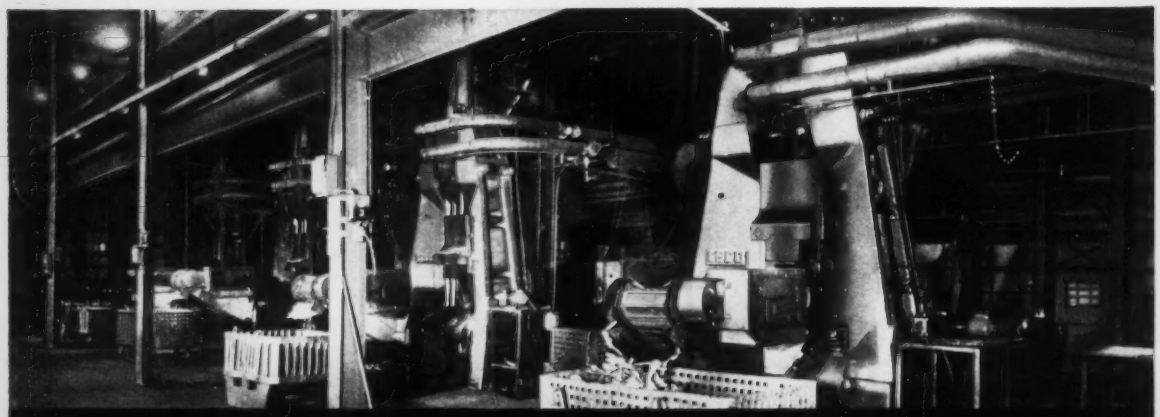
Rollpin is the slotted tubular steel pin with chamfered ends that is cutting production and maintenance costs in every class of industry.

Drives easily into standard holes, compressing as driven. Spring action locks it in place—regardless of impact loading, stress reversals or severe vibration. Rollpin is readily removable and can be re-used in the same hole. Made in carbon steel, stainless steel and beryllium copper. Write for samples and information, ELASTIC STOP NUT CORPORATION OF AMERICA, 2330 Vauxhall Road, R47-1060, Union, New Jersey.

ROLLPIN TRADEMARK

ELASTIC STOP NUT CORPORATION OF AMERICA

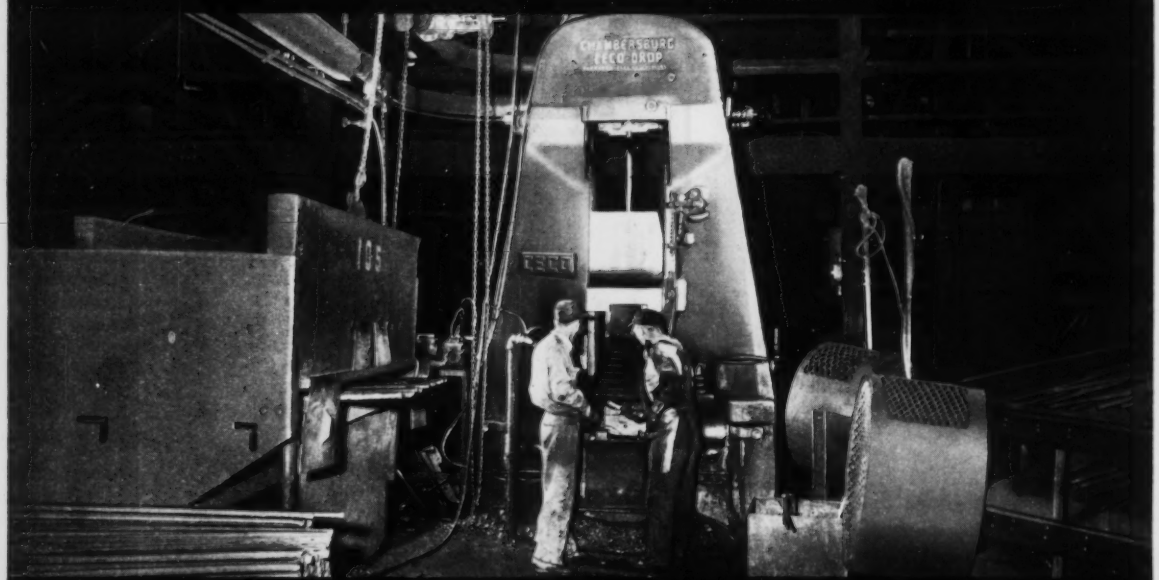
2330 VAUXHALL ROAD, UNION, NEW JERSEY



Four of six Ceco-Drops which replaced Board Hammers in a large automobile forge shop

·CECO-DROP·

The Ceco-Drop was selected because of better maintenance record and ease of operation



High production is maintained—there are no boards to change—fewer adjustments to make

·CECO-DROP·

The Ceco-Drop is safer and easier to operate. "Leg fatigue" is eliminated. There are no overhead hazards

Parts shown here are typical Ceco-Drop forgings

·CECO-DROP·

They are automobile shock absorber parts —pitman, anchor and arms

Have you the latest CECO-DROP bulletin? Write CHAMBERSBURG ENGINEERING COMPANY, Chambersburg, Pa.

CALENDAR
OF MEETINGS

Oct. 21-23, American Society of Mechanical Engineers: Conference on power, Americus Hotel, Allentown, Pa. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: C. E. Davies.

Oct. 21-25, National Safety Congress and Exposition: Conrad Hilton Hotel, Chicago. Sponsor: National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. Secretary: R. L. Forney.

Oct. 23, American Iron & Steel Institute: Regional technical meeting, Hotel Thomas Jefferson, Birmingham. Institute's address: 150 E. 42nd St., New York 17, N. Y. Secretary: George S. Rose.

Oct. 23-25, National Fluid Power Association: Fall meeting, Hotel Statler, Washington. Association's address: 1618 Orrington Ave., Evanston, Ill. Executive secretary: Barrett Rogers.

Oct. 24-26, National Management Association: Annual meeting, William Penn Hotel, Pittsburgh. Association's address: 321 W. First St., Dayton, Ohio. Secretary: Jean B. Adams.

Oct. 27-30, American Gear Manufacturers Association: Fall meeting, Edgewater Beach Hotel, Chicago. Association's address: One Thomas Circle, Washington 5, D. C. Executive secretary: John C. Sears.

Oct. 28-31, Atomic Industrial Forum and **American Nuclear Society:** Annual meetings and 1957 Trade Fair of the Atomic Industry, Plaza Hotel and New York Coliseum, New York. Information: Atomic Industrial Forum, 3 E. 54th St., New York 22, N. Y. Executive manager: Charles Robbins.

Oct. 28-31, National Industrial Packaging & Handling Exposition: Convention Hall, Atlantic City, N. J. Information: Hanson & Shea Inc., One Gateway Center, Pittsburgh 22, Pa.

Oct. 29-31, Truck Body & Equipment Association: Annual convention and exhibit, Sherman Hotel, Chicago. Association's address: 401-402 Washington Board of Trade Bldg., Washington 6, D. C. Executive manager: Arthur H. Nuesse.

Oct. 30-Nov. 1, National Association of Aluminum Distributors: Annual meeting, Camel Back Inn, Phoenix, Ariz. Association's address: 1900 Arch St., Philadelphia 3, Pa. Secretary: R. Bruce Wall.

Oct. 31-Nov. 1, American Zinc Institute Inc.: Meeting of the galvanizers committee of the steel industry, Pick-Ohio Hotel, Youngstown. Institute's address: 60 E. 42nd St., New York 17, N. Y. Secretary-treasurer: J. L. Kimberley.

Oct. 31-Nov. 2, National Metal Trades Association: Annual convention, Conrad Hilton Hotel, Chicago. Association's address: 337 W. Madison St., Chicago 6, Ill. Secretary: Charles L. Blatchford.

Oct. 31-Nov. 3, National Tool & Die Manufacturers Association: Annual meeting, Edgewater Beach Hotel, Chicago. Association's address: 907 Public Square Bldg., Cleveland 13, Ohio. Executive secretary: George S. Eaton.

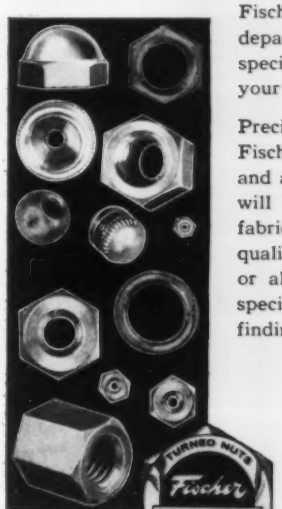
Nov. 1-3, Metal Treating Institute: Annual meeting, Sheraton Hotel, Chicago. Institute's address: 271 North Ave., New Rochelle, N. Y. Executive secretary: C. E. Herrington.

Nov. 2-8, National Metal Exposition and Congress and World Metallurgical Congress: International Amphitheatre, Chicago. Information: American Society for Metals, 7301 Euclid Ave., Cleveland 3, Ohio. Managing director: William H. Eisenman.

WITH

"Fischer Turned"

BRASS AND ALUMINUM NUTS



C-563-FS

Fischer nuts are like "pay dirt" to your production department. Whether they are everyday standards or special and odd size nuts, Fischer will produce them to your specifications from brass or aluminum.

Precision-turned on unique high-speed machinery, Fischer nuts will establish new standards of uniformity and accuracy within your plant. All of this, of course, will speed your assembly operations . . . and cut fabrication costs. There is no premium for this extra quality. Before you place your next order for brass or aluminum nuts (standard or special) send your specifications to Fischer. You'll discover it's like finding "pay-dirt".

Write today for complete information and catalog.

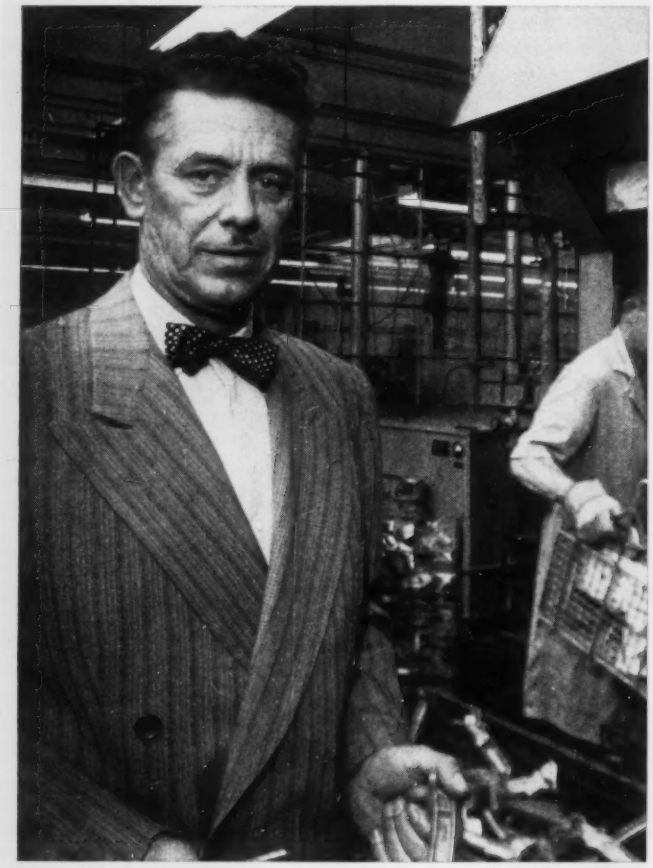
Fischer

FISCHER SPECIAL MFG. CO.

476 Morgan St., Cincinnati, Ohio, WOodburn 1-1280

"We switched over to Columbia-so far we've saved $2,100

says Mr. Bernard Rosebrough
Plant Engineering Project Coordinator
McCulloch Motors Corporation
Los Angeles 45, California

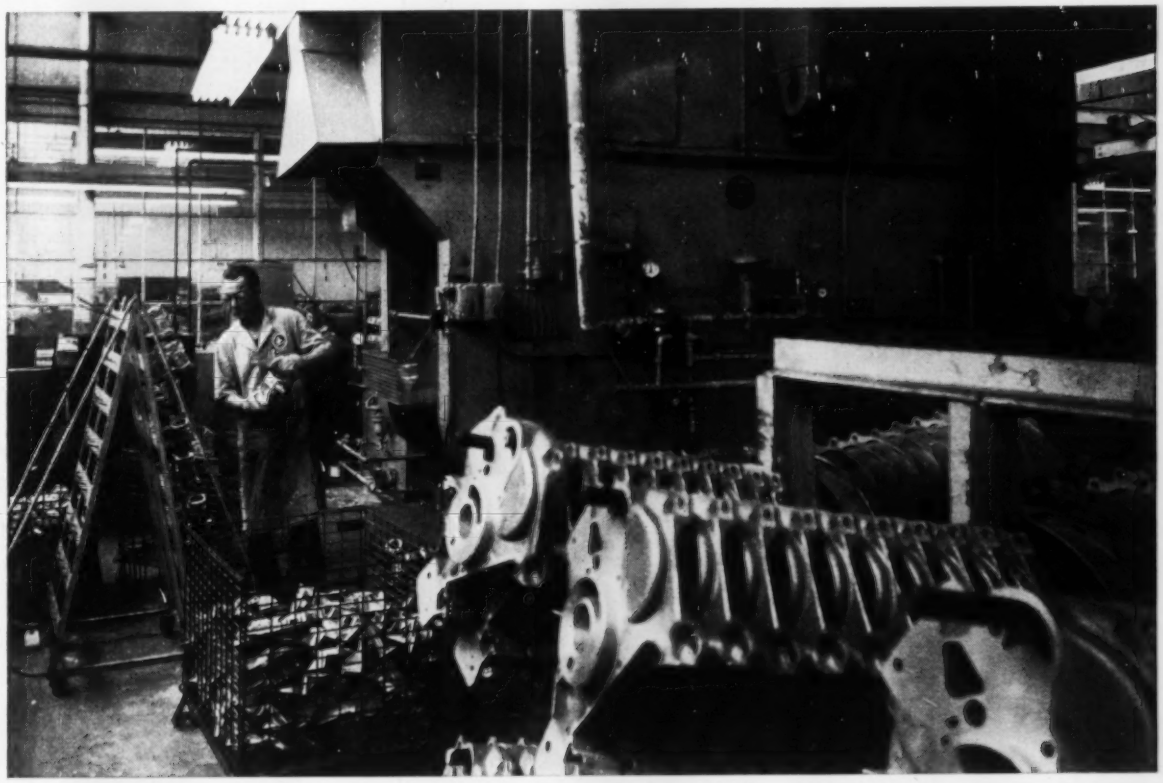


"We'd tried four other degreasing solvents, so I have a real basis for comparison. For example, in the 22 weeks since putting in Columbia-Southern Trichlorethylene, we've cleaned out each of our six units just once. With all the other solvents used, our degreasers needed cleanout and fresh solvent every three weeks. We now make one changeover, instead of eight for the same period. Our net savings on man-hours for maintenance alone, without counting loss of production, adds up to $2,100.

"Here's the plant, at 6101 West Century Boulevard. We produce our own line of McCulloch Chain Saws, Scott-Atwater Outboard Motors, Superchargers for custom cars, and four-cylinder drone engines for military target ships.

"This is the Model 55, one of our most popular chain saws. We run magnesium, aluminum and steel parts through the degreasers in producing all of our saws and other products. That's one reason why we insist on high solvent uniformity and purity.

Southern Trichlor 22 weeks ago—just on maintenance alone!"



"Here's the 'big boy' of our six degreasing units. It's part of our sub-assembly operation. You can imagine what happens to production when it's shut down for cleanout. Figure two men for 16 hours to do a complete drain, clean, refill—see why I like a solvent that keeps a degreaser like this in action? Another big point. A year ago we had a fire in this unit that caused more than $6,000 damage. We believe that Columbia-Southern Trichlorethylene's stability makes it a safer solvent, and reduces fire hazard to a minimum.

"Look like I'm sold on one particular solvent? Well, how about this: Columbia-Southern's Trichlor lets us operate our units ten degrees higher than we felt safe in going with any other solvent tested here. You know what this means: more contaminant saturation, faster cleaning, less solvent used. And I like the dependable delivery and good servicing the jobber and Columbia-Southern's District Sales Office provide."

For more information, contact our Pittsburgh address or any of the fourteen Columbia-Southern District Sales Offices

COLUMBIA-SOUTHERN CHEMICAL CORPORATION
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER · PITTSBURGH 22 · PENNSYLVANIA

DISTRICT OFFICES: Cincinnati • Charlotte • Chicago • Cleveland • Boston New York • St. Louis • Minneapolis New Orleans • Dallas • Houston Pittsburgh • Philadelphia • San Francisco

IN CANADA: Standard Chemical Limited and its Commercial Chemicals Division

DO YOU BUY INDUSTRIAL SCRAP?

W. M. SPIEGEL SONS of Elmira, New York, uses the Dempster-Dumpster System to get the Scrap Business

By placing 8 cubic yard DEMPSTER-DUMPSTER Containers in their scrap supplier's yards, then when loaded, hauling container to their scales with the truck-mounted DEMPSTER-DUMPSTER Model LFW 503, W. M. SPIEGEL SONS find they are more competitive.

The favorable buying position of one of the nation's leading scrap metal dealers is accomplished through scrap collection economies and "since we acquired the DEMPSTER-DUMPSTER SYSTEM," W. M. SPIEGEL SONS report, "we have been able to retire four trucks and transfer the drivers to other productive work.

"The big saving to us is in not having to rehandle the scrap. Our suppliers load the metal as it accumulates directly into our conveniently placed DEMPSTER-DUMPSTER Containers. Our DEMPSTER-DUMPSTER truck driver simply exchanges an empty container for the loaded one and brings the load to our scales. We can immediately process the scrap or stock pile it according to classification."

"The industrial firms from whom we buy scrap like the DEMPSTER-DUMPSTER SYSTEM because —

1. They separate various metals by loading into separate containers.
2. They get higher prices.
3. The scrap accumulation areas are no longer "junk heaps" in their plant."

"We like the DEMPSTER-DUMPSTER SYSTEM because —

1. Fewer collection trucks required for same tonnage.
2. We can pay higher prices for separated scrap.
3. Our scrap suppliers want the DEMPSTER-DUMPSTER SYSTEM.
4. Scrap can be temporarily stored in the container on our yard without dumping and rehandling while the DEMPSTER-DUMPSTER is picking up another load.
5. Only one man on a truck, who does no loading.
6. One DEMPSTER-DUMPSTER hauls more scrap than 4 trucks previously did for us."

You, too, can profit by the DEMPSTER-DUMPSTER SYSTEM. Write us today. *Dempster-Dumpsters and Dempster-Dumpster Detachable Containers are manufactured by Dempster Brothers, Inc.*

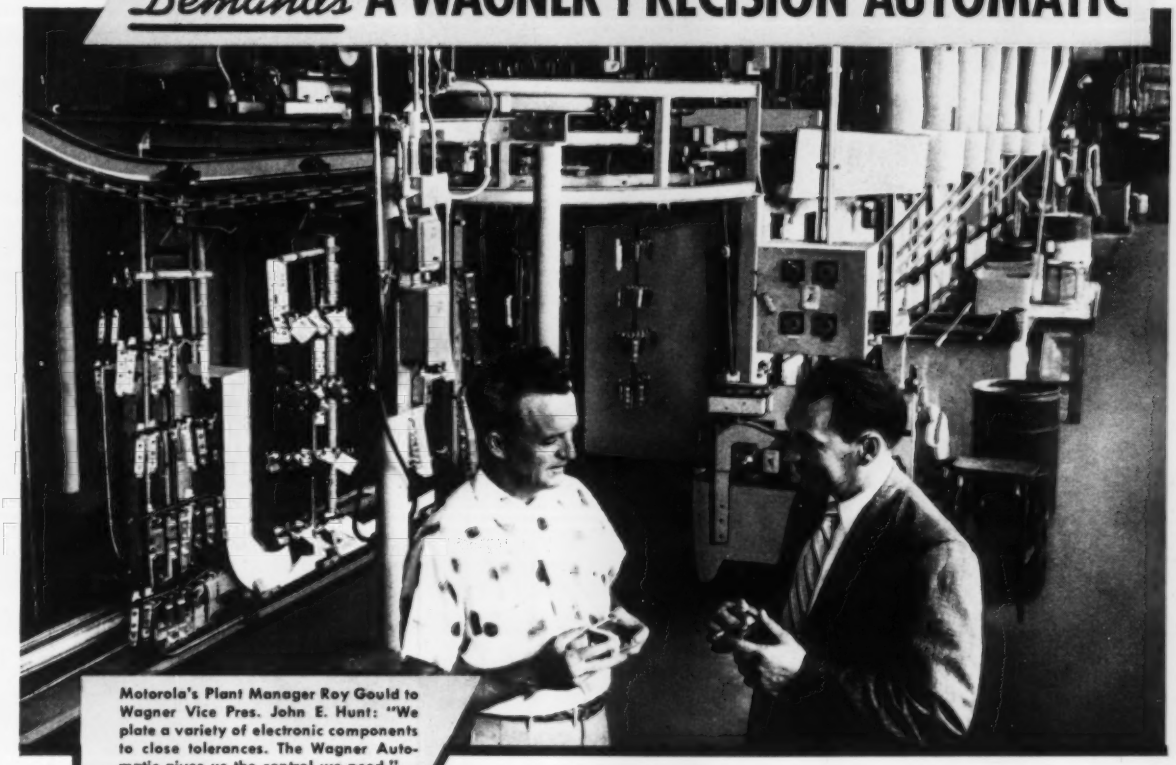
Photos above show how each Dempster-Dumpster Detachable Container is picked up, hauled to W. M. Spiegel Sons' plant and emptied. The three Dempster-Dumpster Containers are placed for easy dock loading at a large industrial plant. Another W. M. Spiegel Sons' location is pictured at right. Scrap metals from the machine shop are deposited in the containers through a chute.

THE DEMPSTER DUMPSTER® SYSTEM

DEMPSTER BROTHERS, 6107 Dempster Bldg., Knoxville 17, Tennessee

MOTOROLA'S PRECISION PLATING

Demands A WAGNER PRECISION AUTOMATIC



Motorola's Plant Manager Roy Gould to Wagner Vice Pres. John E. Hunt: "We plate a variety of electronic components to close tolerances. The Wagner Automatic gives us the control we need."

Television and other electronic components are cadmium plated to specifications much more rigid than most military parts. That's why Motorola, Inc., after an intensive study of all makes of automatic plating machines in the plants of its suppliers and many other manufacturers, specified a Wagner Automatic for their critical work, a deposit of .0003" +.000075" —0". This precision plating machine, designed to solve Motorola's problems but using many standard components, now produces 95% of the requirements of the Communication and Industrial Electronics Division, proof of the versatility of Wagner design and engineering.

Plant Manager Roy Gould says, "Only the Wagner Automatic offers all the features desired, in addition to the greatest output per hour of the quality plating we demand. We like the smoothness of lift and transfer, the absence of impact, the elimination of a tremendous superstructure, and the foolproof hydraulic system. The simplicity of design and the standardization of parts and assemblies enable our mechanics to handle all adjustments and maintenance. The installation was fast—and the Wagner men performed their company's contractual and unspoken obligations competently and without hesitation. Since the first week or two of running, only minor adjustments have been needed."

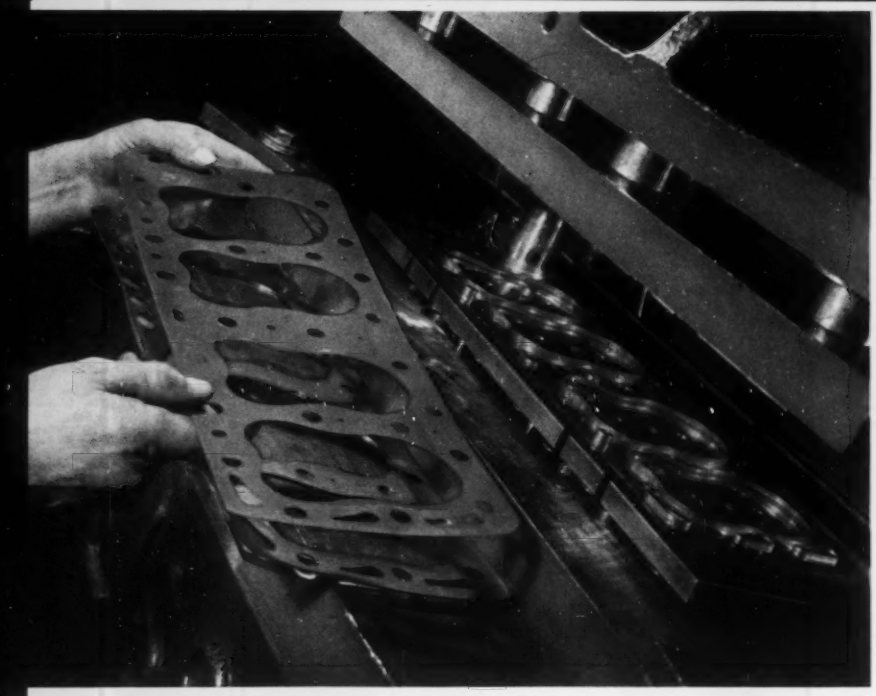
Remember, only Wagner manufactures the equipment and processes the chemicals required by your plant. For information on Wagner automatic plating machines and materials handling engineering services, write today or call our representative in your area.

MANUFACTURERS AND PROCESSORS OF ALL METAL-FINISHING CHEMICALS, ANODES, AND EQUIPMENT

400 MIDLAND AVE., DETROIT 3, MICHIGAN

CHICAGO • CINCINNATI • CLEVELAND • INDIANAPOLIS • NEW YORK • ROCHESTER • GRAND RAPIDS

Wagner BROTHERS INC.



Steel's Strength, Copper's Fluidity (sealing ability) and corrosion resistance all are combined in Sterling Automotive Mfg. Co.'s use of Thomas copper-coated steel strip. By lubricating dies during punch press forming, copper coating boosted die life by 33%. The Chicago company turned to Thomas electro-coated strip to give its auto head gaskets extra strength needed for today's high-compression engines.

20 Million Shoe Horns a Year are made in Crawfordsville, Ind., plant of Steel Industries, Inc., where Thomas Strip saves up to 40% of production cost. From nickel-coated Thomas Strip, shoe horns get bright, shiny finish with only ball-burnishing after forming.

New Ways To Cut Costs With Thomas Strip

How Six Manufacturers Use These Production Ideas For Better Products

Ray-O-Vac Company saves $100,000 a year at its Clinton, Mass., Flashlight Division, by using Thomas copper-coated strip for flashlight cases. Compared to brass, Thomas deep-drawing strip is fabricated faster, requires less processing — also, copper coating lubricates dies and provides good chrome-plating base.

Manufacturers pictured on these pages chose Thomas Strip because it cuts costs, improves products—gives them higher profits and increased sales.

Pre-coated Thomas Strip is furnished ready for use with electro-plated coatings of zinc, copper, brass, nickel, or chrome . . . or hot dip coated with lead alloy or tin . . . and coated with clear or colored lacquer.

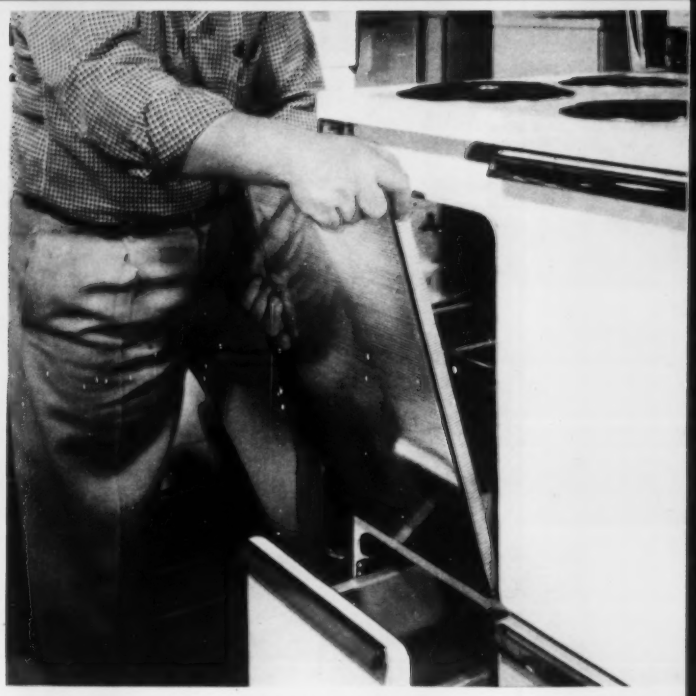
Uncoated Thomas Strip products include low carbon, alloy and high carbon spring steel grades. All are available in a wide range of sizes, gages, tempers and finishes.

You also can get cold rolled Thomas Strip plain or coated with a rolled-in pattern design of your choice.

All Thomas Strip products can save you money and enhance your product in six important ways:

- **Fabricates Easily**—coated steels stand fully as much fabrication as uncoated strip.

Increased Saleability and Profits followed Pioneer Can Co.'s switch from lithographed tin plate to brass-coated Thomas Strip with a rolled-in pattern design. Pioneer's waste baskets and decorative cans gained in durability, beauty and re-use value. They command a higher price now and return more profits.



General Electric's styling of its deluxe range made at Appliance Park calls for liberal use of pattern-rolled Thomas Strip. Deeply rolled rib design, satin chrome-coated, is used on oven door—adds distinctive modern touch to GE's Keyboard Ranges. Thomas offers many design patterns in plain or coated steels.

- **Longer Die Life**—most coatings lubricate dies, reduce wear and increase tool life.
- **Maximum Pieces Per Pound**—precision rolling to extremely close size tolerances gives more square feet of strip per ton.
- **Lower Plating Costs**—coatings can serve as final product finish or as base for further plating or painting.
- **Speeds Fabrication**—Thomas Strip coatings eliminate costly intermediate fabricating steps such as cleaning, buffing, even plating.
- **Steel's Strength and Economy**—are combined with beauty and utility of more expensive metals.

All the savings and benefits Thomas Strip specialties are giving to fabricators shown here are available to you. A national sales staff—familar with design and fabrication advantages of Thomas Strip is ready to serve you.

Write for samples, and additional cases of users' actual experiences with Thomas Strip Products. Do it today.

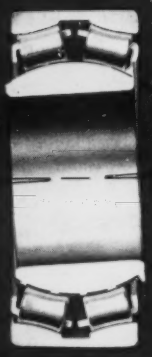
Stack 'n Add is another new product of Quaker Industries, Kenosha, Wisc. The smart sectional shelving gets strength, beauty and economy through use of Thomas brass-coated, buffed and lacquered strip for upright supports. Electro-coated Thomas Strip eliminates expensive pre-forming preparation, as well as costly plating.

Thomas Strip®
Division
Pittsburgh Steel Company
Grant Building · Pittsburgh 30, Pennsylvania

District Sales Offices:

Atlanta	Columbus	Detroit	New York	Tulsa
Chicago	Dallas	Houston	Philadelphia	Warren, Ohio
Cleveland	Dayton	Los Angeles	Pittsburgh	

self-aligning . . . CAN'T BIND



HOW SELF-ALIGNMENT WORKS. Spherical inner ring, free to align in any direction, assures full load capacity regardless of shaft deflection or support misalignment.

Husky bearings in husky housings adjust immediately in any direction

When high-impact loads deal out punishment, shaft deflection may spell a quick finish for ordinary bearings. But this rugged Link-Belt bearing is *self*-aligning . . . won't "pinch" or bind when misaligned.

Complete protection is provided by effective seals which block entrance of dirt, escape of lubricant. Durable housing—machined as two perfectly matched parts provides easy installation without shims or alignment rings.

Get full data on Link-Belt's complete bearing line from Book 2550. Ask any of 40 Link-Belt offices or one of our authorized stock-carrying distributors.

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*Iron Age Magazine Listing, March 28, 1957

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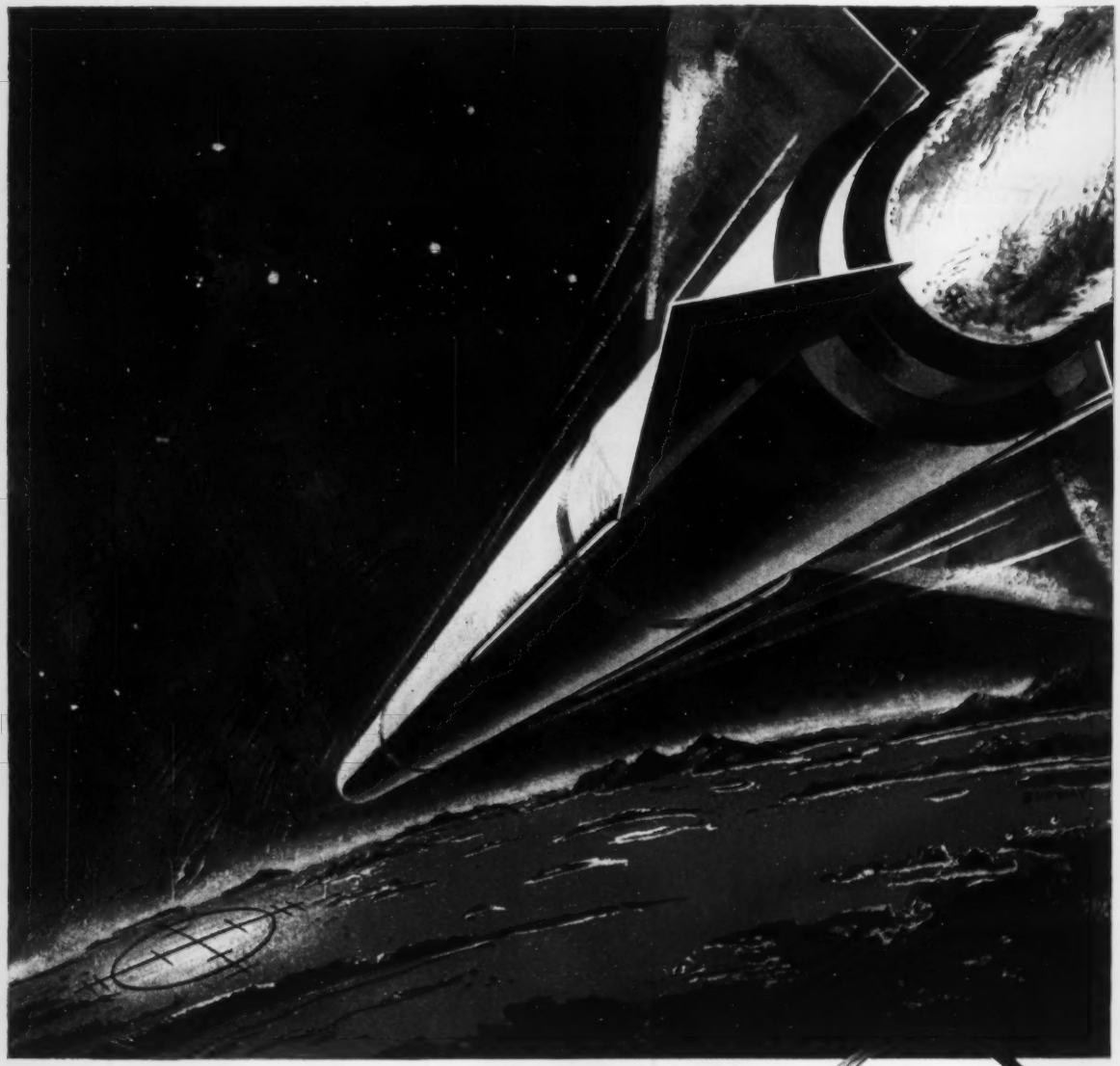

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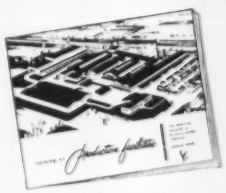

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The World's Leading Manufacturer of Welded Rings

Effects of Military Cutbacks

The military cutback program has not had serious effects on the metalworking industry, except for aircraft manufacturers and their major suppliers. One type of military supplier, the electronics manufacturer, is doing better this year than last. The electronics industry will mark up more than $3.5 billion in sales to the military this year, compared with $2.8 billion last year. About $1 billion of 1957's volume will be for missiles. While aircraft makers will substantially curtail their subcontracting, effects in other areas are inconsequential.

Does Thiokol Plan Huge Rocket?

Published reports on the power of the rocket which the Russians used to launch sputnik give it a thrust of 250,000 lb, allegedly at least twice the size of anything the U. S. has. New light was shed on the issue at the dedication of Thiokol Chemical Corp.'s new rocket engine plant (Brigham City, Utah) last week. The firm reveals its plans include a test stand "capable of testing rocket chambers up to 12 ft in diameter and producing 2 million lb of thrust." Thiokol specialized in engines using solid propellents. Comments a top Defense Department missileman: "I have never heard of such an engine. It might be needed for a manned satellite, but no plans exist."

Steel Earnings Good

Early financial reports of steel companies for the first nine months show these net earnings: Youngstown Sheet & Tube Co.—$31.8 million for the 1957 months vs. $24.9 million for 1956 months; Allegheny Ludlum Steel Corp.—$9.7 million vs. $9.6 million; Lone Star Steel Co.—$9.4 million vs. $6.9 million.

Scrap Volume To Decline

Scrap dealers (meeting with the Business & Defense Services Administration) think the domestic market for purchased iron and steel scrap will be down to 31 million net tons next year, compared with this year's 32.5 million tons. Export demand will be 5.5 million tons, compared with 6.2 million tons in 1957.

Twentieth Birthday for Social Security

America's social security system is 20 years old this year, but the birthday is not altogether happy. Social security benefits are outrunning tax receipts. The $20-billion reserve fund built up over two decades is starting to decline. Benefit payments remained small until 1950 when they were less than $1 billion a year. They're now at an annual rate of more

than $7 billion. The deficit in receipts vs. benefits won't become large until 1960. Needed now, however, is a comprehensive review.

Metalworking in New York

Take a look at New York as a market for metalworking goods. Some 124 primary metal products firms in the state are doing business to the tune of $2.4 billion a year (22.1 per cent of total U. S. volume in that area). Some 119 fabricated metal product companies do $537 million (18.8 per cent of total). Some 158 electrical machinery companies do $776 million (15.5 per cent of total). Some 500 machinery (except electrical) firms do $820 million (13.7 per cent of total). And 91 transportation equipment companies do $1.1 billion (12.3 per cent of total).

Price Investigation Set by Congress

The Joint Economic Committee will study the relation between prices and economic stability. Rep. Wright Patman's (D., Tex.) committee has set April, 1958, as the deadline for gathering analyses by the nation's top economic experts. Public hearings will follow. The committee estimates the nation's gross national product at a seasonally adjusted annual rate of $443 billion to $445 billion in the fourth quarter, up $17 billion to $19 billion from the fourth quarter of 1956. The 1957 average will be $436 billion to $437 billion.

FRB Sets Goals for Small Business Study

The Federal Reserve Board's study of small business financial problems will seek to answer these questions: 1. Is a new definition of small business needed? 2. How do you discover the credit needs of small firms? 3. Is small business affected more or less by a general economic downturn? 4. Do small firms compete with big ones for credit, or new firms with old ones? 5. How significant are the figures on small business failures? The study is scheduled for completion in 1959.

Switchback to Coal?

The Bituminous Coal Institute thinks it sees a trend among commercial and industrial fuel consumers to switch to coal. It reports conversions from oil and gas heating units began early in 1956 when oil and gas prices rose. Metalworking industries are leading the movement in the North; textile, chemical, aluminum, and paper manufacturers in the South.

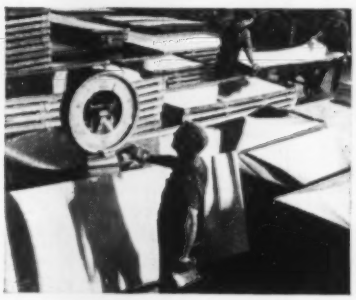
Straws in the Wind

Carpenter Steel Co. has moved a step closer to acquiring the assets of bankrupt Northeastern Steel Co. by a court O.K. to assume temporary management of the firm . . . Armco Steel Corp. will spend $1.5 million to boost capacity for spiral welded pipe at Middletown, Ohio . . . A. M. Byers Co. is entering the plastic pipe field on a national basis.

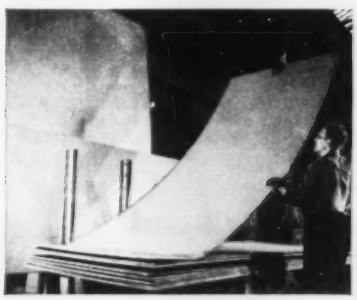
2351

types, shapes, sizes and finishes of Allegheny stainless in stock at Ryerson

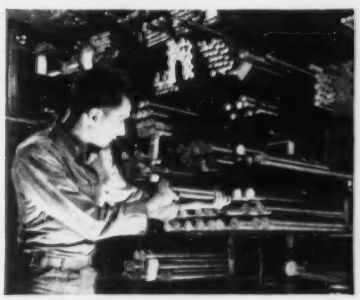
When you want stainless fast . . . anything from one to 2351 types, shapes, sizes and finishes . . . telephone Ryerson. You can depend on accurate processing and quick shipment from Ryerson . . . the nation's oldest supplier of stainless from stock.



STAINLESS SHEETS—Eleven analyses of Allegheny stainless sheets, including nickel and straight chrome types. Extra wide sizes, also, to reduce welding costs. Expanded and perforated sheets.



STAINLESS PLATES—Nine analyses, including plates to Atomic Energy Commission requirements and to ASTM specifications for code work. Also extra low carbon types for trouble-free welding.



STAINLESS BARS AND ANGLES — Eight types, including rounds, squares, flats, hexagons and angles. Free-machining bars with both analysis and mechanical properties controlled for best performance.

STAINLESS PIPE AND TUBING—Light wall, standard and extra heavy pipe, ornamental and regular stainless tubing. Also screwed and welding fittings and Cooper stainless valves.

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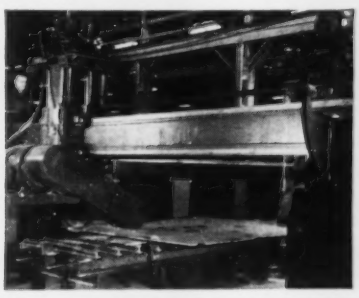

TRUE-SQUARE ABRASIVE CUTTING—Stainless plates up to 12′ x 25′ cut absolutely square on abrasive disc machine. Length and width tolerance plus or minus 1/32″.

Principal products: Carbon, alloy and stainless steel — bars, structurals, plates, sheets, tubing, industrial plastics, machinery and tools, etc.

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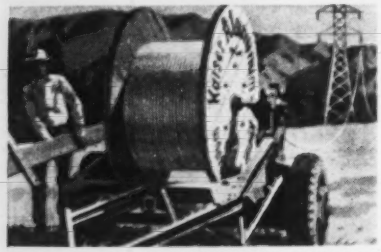
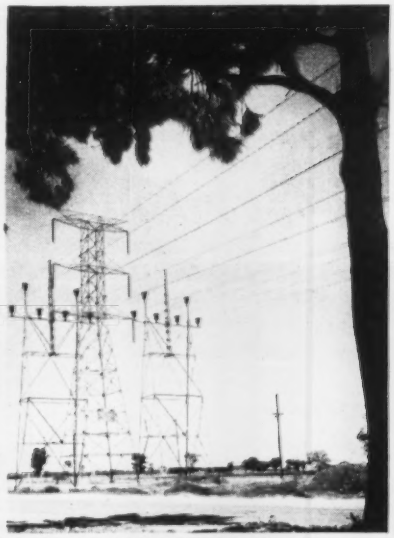


COURTESY KAISER ALUMINUM AND CHEMICAL CORPORATION, NEWARK, OHIO



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Portsmouth Aluminum Cable Strand Reinforcement (ACSR) Core Wire strengthens the cable to span longer distances; helps resist destructive effects of extreme temperature changes, winds, ice and lightning; reduces power transmission costs.

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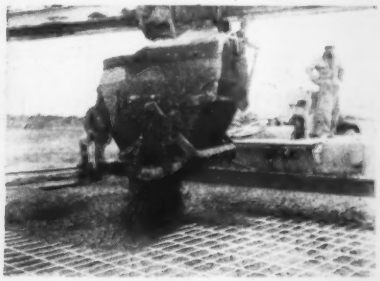
DSC Portsmouth WIRE

helps cut your final costs

Here are a few typical applications of DSC Portsmouth Wire. These include high tension power transmission lines; pavements, buildings and drainage systems; spring unit constructions in furniture and car seat cushions. In each case, its function is to enhance the economic value of the end-product.

Our job is to help you with yours.
How about calling a DSC Customer "Rep"... today?



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MILL DIVISION: DETROIT, MICH., HAMDEN, CONN.

Cold Rolled Carbon Steel Strip
Flat Cold Rolled Carbon Spring Steel

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Why Not a Profit?

With the leveling of business, we hear this comment more and more:

"Price cutting in our industry has never been worse, and our profit margin is being squeezed thinner and thinner."

A variety of reasons for the situation may be cited, but in essence they boil down simply to the fear of losing a sale. The emphasis is on volume, without an adequate knowledge of costs, or what may happen at the foot of the profit column.

There is no happy solution to the frustrating problem of operating and selling at a profit. But we've heard about a constructive approach that impresses us: The cost analysis work being done by the American Steel Warehouse Association. The principles involved apply to manufacturing as well as to the operations of distributors. (See Page 48.)

In launching its study about two years ago, the ASWA believed that it needed an analysis of costs far more penetrating than the information found in the ordinary financial statement.

So it dug into costs in relation to functions and products rather than the usual general expense divisions. As a result, it now has figures showing the cost of order processing, slitting, shearing, handling, delivery, outside selling, inside selling, administrative selling, and 29 other items as applied to 35 product classifications. For the first time, the warehouse industry has information about costs by product and services performed.

The information is useful in many ways. Companies can determine whether individual costs are out of line, where to concentrate selling effort, and where to invest capital for expansion. They can evaluate profitability in terms of order size, customers, and territories.

More importantly, if management has knowledge of true costs, it will insist upon operating at a profit.

Irwin H. Such
EDITOR-IN-CHIEF

HOW WOULD YOU CAN a Neutron?

ZIRCONIUM . . . because of its low absorption rate for free neutrons . . . has been selected for use in atomic reactor plants now under construction. This rare wonder metal is derived from the black specks present in ordinary beach sand; in tubular form it serves as a container or can for the uranium pellets used in the fuel packages.

As a pioneer, Damascus has successfully welded zirconium tubing in several sizes and is now prepared to quote on production runs of Zirconium, Zircaloy 2 and Zircaloy 3 for reactor applications.

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Consumer Goods Going Up

Business dip and tightening competition will stabilize some prices during the next half year, but be prepared for a steady stream of hikes averaging 3 to 5 per cent

PRICES of consumer hard goods will continue to inch up over the next six months. Manufacturers are caught in the same inflationary squeeze as component makers (STEEL, Sept. 30, p. 49) and equipment builders (STEEL, Oct. 7, p. 122). They find increased productivity and cost cutting are not enough to offset added expenses.

It doesn't mean hikes will be felt in all categories. Price patterns vary drastically from industry to industry. While some industries look for a general advance, others see only sporadic boosts by individual companies.

A few industries don't expect any upward adjustment. For example, those geared to housing starts (such as home furnaces and plumbing goods) find profit margins dwindling as business falls off and list prices being ignored in the scramble for this sales dollar. A further complication: Many companies have the capacity to produce far more goods than they can sell in the current market.

Here's how the pricing outlook shapes up for the next half year in eight consumer hard goods industries:

Automobiles—Look for an increase of 4 to 6 per cent in most 1958 models. Factory price revisions will be announced in the next few weeks as the new series are unveiled.

It's possible some of the smaller makers will hold the price line in an effort to gain a greater share of the market. In fact, American Motors Corp. plans to chop 9 to 10 per cent off its top Rambler Ambassador line. It would put AMC's top models under $3000.

Automakers blame higher labor and material charges for the forthcoming boost on 1958 models.

Although manufacturers say they have to bump prices this year, they hope the line can be held on 1959 models. One of the ways this can be done, they assert, is to plow back profits to buy more highly automated equipment. Chrysler Corp., for example, already has announced it will allocate more money for tools and facilities in 1958 to raise productivity.

A big factor in next year's pricing outlook is how well autodom meets labor's demand.

Radio and TV Sets—The pattern in most television and radio lines is up.

During the next six months, watch for markups of 5 to 10 per cent on TV sets. One manufacturer reports prices will jump $10 a set in December.

Fierce competition has kept per unit profit on TVs low for several years. This forced 23 makers out of the market in 1956, but 32 manufacturers remain to fight for the estimated 6.4 million sets to be sold this year (6.6 million were sold in 1956).

Even with the tough competition, prices will have to rise, say manufacturers. Reasons: 1. Component prices are going up (they account for over 50 per cent of a set's cost). 2. Costs of other materials are rising. 3. Labor is higher.

Probably the most important factor in climbing prices is the trend within the industry to raise profit margins. Prices started on

Wholesale Price Index To Hit 129.5 in Next Five Months

the upswing last fall and were advanced 10 per cent in June. Look for the trend to continue, at least for another year.

Most radio sets will follow the TV pattern. However, improved production techniques may bring price reductions in transistor models.

Washing Machines—Many makers haven't raised prices since 1956 when an average 5 per cent hike went into effect. (There are a few cases of increases early this year.) During the next half year, watch for upswings of 2 to 5 per cent as companies compensate for increased costs. Frigidaire Div. of General Motors Corp. has already announced it's boosting prices on 1958 lines $5 to $10.

Competition has forced manufacturers to absorb costs. Many say profit margins have been seriously affected. As Judson S. Sayre, president of Norge Div., Borg-Warner Corp., Chicago, puts it: "The appliance industry is in an era of profitless prosperity. The industry can't absorb any more costs without raising prices across the board." Says Fred Maytag II, president of Maytag Co., Newton, Iowa: "Since profit margins in the home laundry industry have already been squeezed, it's doubtful that much more cost absorption will occur."

Home Furnaces—No standard pricing policy exists in this industry. Since midyear, some makers have hiked quotations 2 to 5 per cent. (A few haven't increased since 1956.) During the same period, other firms have hacked prices sharply.

Competition is probably the main villain in today's pricing hassle. (Around 400 companies are in the field.) A slump in housing starts has pulled business down about 15 per cent this year, adding more fuel to the competitive fire. One eastern manufacturer says residential heating equipment is being marketed for little more (in some cases less) than it was six years ago.

Most companies have dropped prices recently to cut unwieldy inventories. Some seasonal dumping is usually done at this time.

Outlook: Over the next six months, there probably won't be any general industry price trend. Best bet is that about half the industry will hold prices where they are; the other half will boost quotations an average of 5 per cent. It's unlikely this period will see further cuts.

Hot Water Heaters—Prices will be relatively stable over the next six months. Most makers hiked quotations 2 to 5 per cent this year to help compensate for higher labor and material costs.

Absorption of costs has trimmed profit margins, but the competitive situation is so intense that adjustments are unlikely. The slump in housing starts lowered first half factory sales of automatic gas water heaters by 11 per cent and electric storage water heaters by 17 per cent. The comparison is with the same period in 1956. The situation hasn't improved much since midyear.

Some observers say the tight business picture has made any published pricing policy a myth. "Discounts and special deals flourish today," charges an eastern company.

Metal Furniture—Within the next six months, about half the industry expects to raise prices 4 to 5 per cent. The other 50 per cent will hold the line.

A few manufacturers have raised prices an average of 7 per cent this year. Many have not made an adjustment since last year, some not since 1955.

Company estimates show business volume is running 3 to 20 per cent below last year's. The situation has tightened competition and forced manufacturers to absorb additional costs. One firm reports it is receiving more and more requests from customers to guarantee present prices until the end of the year. Another company says its forthcoming adjustment may jeopardize sales to some re-

tail stores, but that pricing has to be put on a realistic basis.

Labor is the biggest cost item for the industry. Since most companies say they can't absorb any more costs, watch for a round of increases next summer and fall if the unions win higher wages.

Cooking Utensils—Prices have gone up an average of 5 to 7 per cent since the first of the year. Outlook is for stabilization until next summer when manufacturers will again adjust upward to compensate for pay boosts and anticipated increases in steel and aluminum.

Manufacturers report they have been absorbing a large percentage of added costs with a resultant drop in profit margins. But industry volume is up this year, raising hopes that total profits will not fall off (the industry traditionally does a large chunk of its business in the fourth quarter).

Plumbing Goods—A decline in housing starts is mainly responsible for a 12 to 15 per cent falloff in industry business this year. This lack of demand and the resultant upsurge in competition should keep prices from rising in the next six months. In fact, any price change at all will probably be on the downward side. The fact that the industry is geared to produce far more goods than it can sell in the present market complicates matters.

Official price lists, though, have meant little in the industry this year. Producers admit across-the-board discounts on big orders.

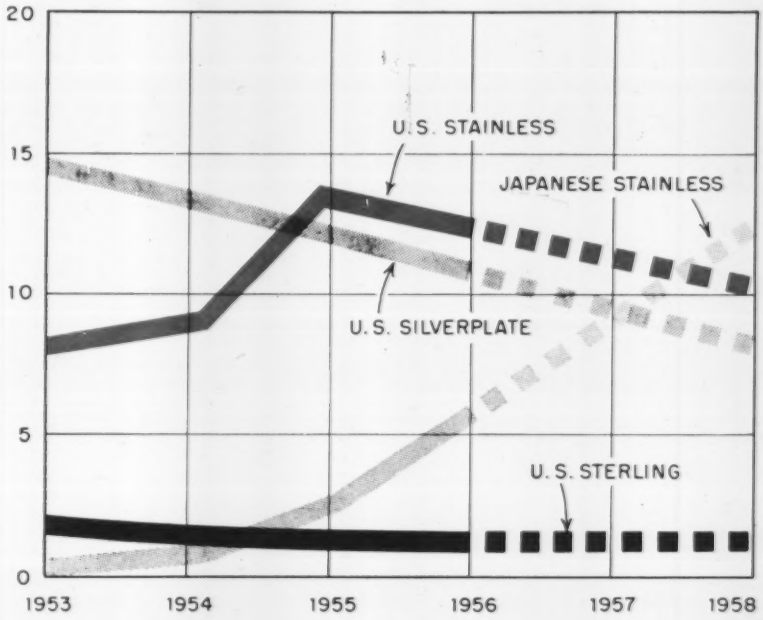
Future—The long term outlook is for a continuation of the upward spiral. While most companies are trying their best to absorb increases through cost cutting and greater productivity, the profit margin still shrinks in many cases. The philosophy is growing that old pricing policies must be junked and a realistic approach taken if industry is to remain healthy.

This is the last of four articles on prices that affect metalworking. Component quotations were dealt with Sept. 30, equipment Oct. 7, and construction Oct. 14.

An extra copy of this or other articles in the series is available until the supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

Japanese Stainless Steel Shipments Hit U. S. Flatware Makers

(Millions of dozen pieces)



Jap Flatware Gains in U. S.

U. S. IMPORTS of Japanese stainless steel flatware have increased 1305 per cent from 1953 to 1956, say U. S. manufacturers (see chart above). In 1953, sales of Japanese-produced pieces were 4.8 per cent of U. S. manufacturers' sales. By the first quarter of 1957, they were 54.3 per cent, a gain of 1107 per cent.

Suporting in principle the U. S. world trade policy under the General Agreement on Tariffs & Trade (GATT), American producers have asked Washington for a definite quota limitation to save their industry.

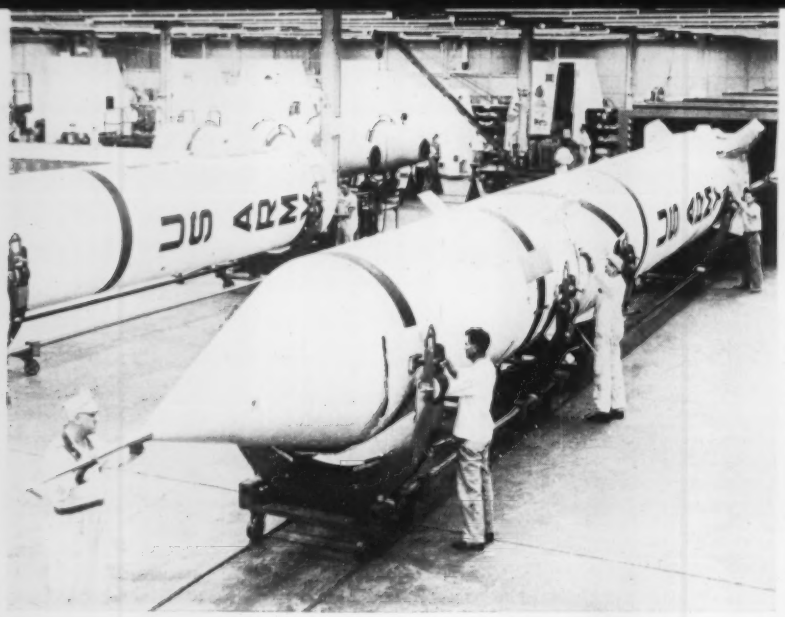
Japanese workers receive 22 cents per hour, compared with $2.39 per hour paid U. S. workers. "No amount of mechanization can ever overcome such a differential," plead American manufacturers.

In a statement to members of Congress, U. S. manufacturers say: "We expect to sacrifice a certain portion of our market (under the world trade policy) but when low wage, low standard of living countries take a share approaching 50 per cent then we say that the basic economic welfare of our business is being undermined, and our employees' traditional livelihood is being destroyed."

Eastern Buys a Sendzimir

A new Sendzimir mill, with supporting equipment, has been installed by Eastern Stainless Steel Corp., Baltimore. The firm's $8-million expansion program will be completed next month.

The Sendzimir mill is turning out stainless 0.078 to 0.007 in. thick and up to 48 in. wide. Eastern plans to produce sheets 0.003 in. thick for use in supersonic aircraft and missiles. The mill increases Eastern's capacity about 50 per cent.



Ready for outer space. This Redstone missile is getting finishing touches from Chrysler technicians in Detroit. It is ready to be shipped to range

Nerves for electronic brain. Miles of wire carry impulses to controls

First Peek at Chrysler's Redstone

Army reveals some information on the medium range guided missile. First pictures of giant weapon show various stages of production on Detroit assembly line

THE ARMY Ballistic Missile Agency has slightly parted the curtain of secrecy surrounding the Redstone ballistic missile. The 63-ft medium range weapon is manufactured for the Army by Chrysler Corp., Detroit.

The successful launching of sputnik has led some experts to conclude that such a powerplant would be adequate to drive an ICBM, as the Soviets claim.

The resulting hullabaloo may have been a factor in the decision to give the public a glimpse of the Redstone, which is called long range artillery by the Aircraft Industries Association of America (STEEL, Oct. 7, p. 121).

Immune—Experts consider the Redstone "relatively immune" to any known countermeasures because of its terrific speed and self-contained guidance system. The huge missile is not in the test phase. It is an accomplished weapon in our arsenal of defense.

One of the largest to be successfully flown in the Western Hemisphere, the Redstone can be transported by cargo plane, complete with field firing and launching equipment.

It is transported in two components. One holds the powerplant and fuel tanks (34 ft) and the other (29 ft) holds the warhead and control system.

Mobile—The Army plans to move the missile around in combat zones on flatbed trucks, in the same manner that heavy guns are moved.

The intricate electronic brain allows the Redstone to be guided in flight. Its range, speed, and weight have not been revealed. These photographs show various stages of its assembly.

Army troops train regularly with the Redstone, which is fired from a site somewhere on the coast of Florida. Officials have not given details, but they report the huge weapon's performance is satisfactory.

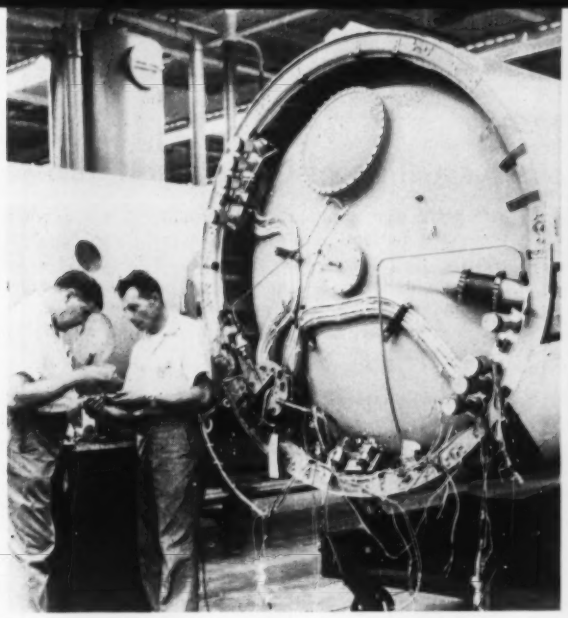
Contributors — Chrysler, the prime contractor, produces the airframes. North American Aviation Corp., Los Angeles, makes the powerplant. Reynolds Metals Co., manufactures aluminum alloy skins at its Sheffield, Ala., plant.

Instrumentation is done by the Ford Instrument Co. Div., Sperry Rand Corp., Long Island City, N. Y.

Stepped Up — Our missile (we have 39 in various stages) program is top secret, but in the wake of Russian progress it does not require a crystal ball to predict that the pace will be rapidly stepped up.

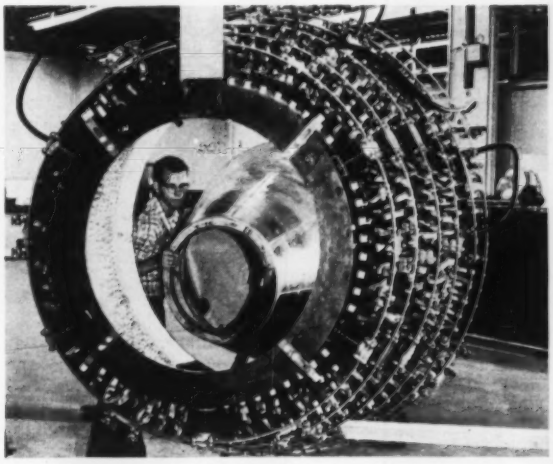
Assuming a constant Defense budget of $13 billion through fiscal 1961 for military hardware, it's not hard to guess we'll spend $5.5 billion or more for missiles that year.

The AF says it will spend 50 per cent of its hardware budget for missiles by 1961. The Navy plans 35 to 40 per cent of its aeronautical budget for missiles in five years. The Army isn't talking, but it will be spending, too.

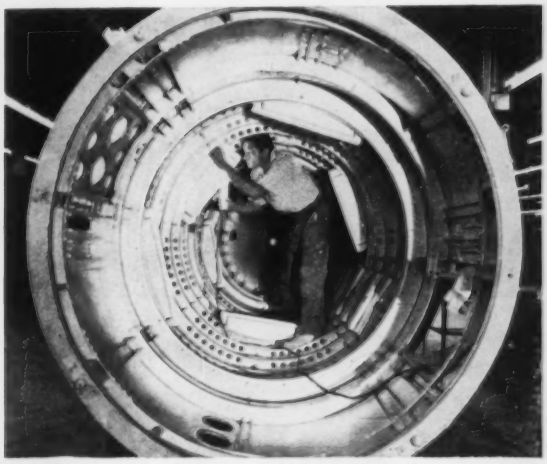


Precision. Wiring must be secure to survive blastoff. Experts prepare a booster section

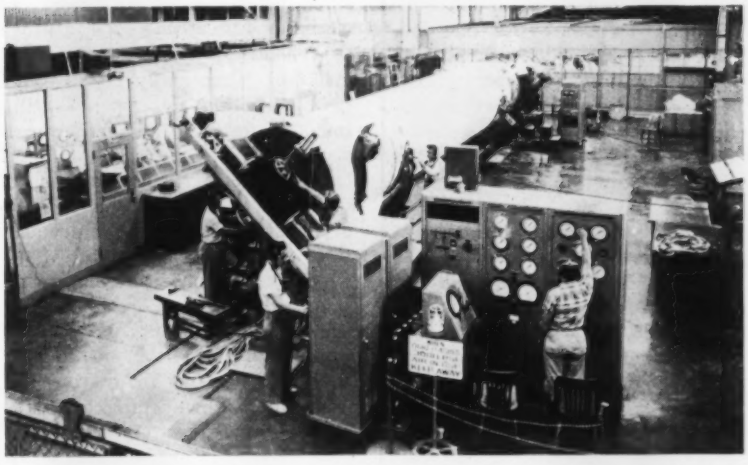
Steered from tail. Technicians check control assembly in tail section of Redstone missile



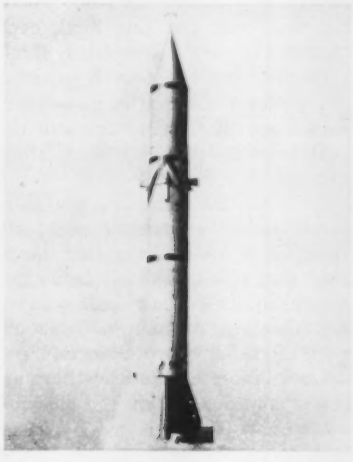
Hotfoot in reverse. This circular oven duplicates temperatures encountered when missile re-enters atmosphere



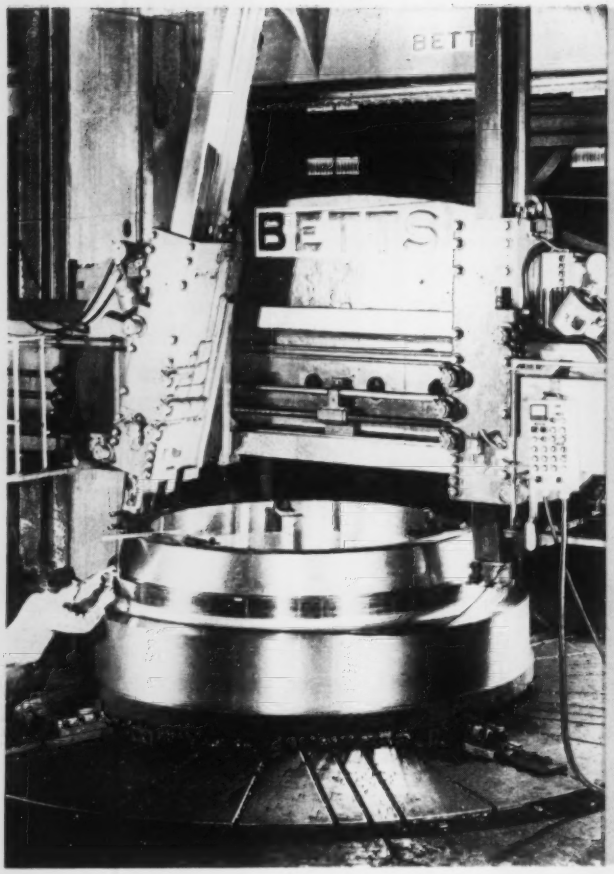
Last look around. The nose cone (where the warhead rides) is seen in background as technician checks



Simulated flight. Instruments record effects of wind, temperature, acceleration, and rarefied atmosphere in preflight test



Blastoff. Redstone climbs for stratosphere on way to target



U. S. Steel Corp.

Capital Goods Off in Fourth Quarter

Construction Equipment—The industry is still waiting for federal highway program to get off dead center. Business may be soft until mid-1958.

Foundry Equipment—Inquiries are at a high level, but orders are coming in slowly. New orders for year will be off 15 to 20 per cent.

Heavy Electrical Equipment—Business has backed off only slightly. No significant pickup in the fourth quarter is expected, but it may come in last half of 1958.

Industrial Furnaces—No significant pickup in fourth quarter orders reported. Forecast is small increase in first half of 1958, followed by faster second half.

Machine Tools—Net new orders may dip to $30 million a month in the fourth quarter. Lack of automotive orders is biggest problem. Inquiries are good.

Material Handling Equipment—Fourth quarter upturn to be less than expected. Inquiries are active. Orders for 1957 will fall 10 per cent short of 1956's.

Mining Equipment—Sales for 1957 will about equal 1956's. Next year should see continuation of this high level plateau.

Steel Mill Equipment—Business is good, but no upturn is expected until 1958. Foreign sales are holding up better than domestic.

Wait Until Next Year

PRODUCERS of capital goods are anything but pessimistic about business over the long haul, even though they are disappointed about prospects for the fourth quarter. A high level of inquiries gives them confidence that an upturn will appear in 1958—probably in the third quarter.

All year the battle cry has been, "wait until the fourth quarter!" Now three weeks into that quarter, manufacturers of industry's heavy equipment are still waiting for something to happen. Few expect anything more than a slight upturn before yearend, while most see a continuation of the sidewise movement, or even a downturn. But as if to prove the truth of Alexander Pope's line, "hope springs eternal in the human breast," they have transferred their confidence to 1958.

Things To Come—As one machine tool industry spokesman puts it: "In making our projections, we have always relied on our inquiries. They are about as good now as they ever have been, but customers are hesitant to make firm commitments. They seem to be waiting for some indication of which way the current is running. We're confident the orders will materialize, but it probably won't be until next year."

That characterizes the attitude of many producers of the eight types of equipment listed above. But it does not mean that they are writing off 1957 as a bad year. Most started out like a house afire. Since the beginning of the second quarter, they have been hacking away at backlogs, so that shipments this year for most of them will be as good as or better than they have been in most previous years. Many consider the current slump as a breathing spell in which to consolidate their gains of the last two "abnormally high" years.

Construction Equipment — "Our industry feels the road program is a year behind the schedule originally expected," claims one major producer of construction machinery. "In 1958, we may achieve the sales goals we set for 1957." Sales of this industry have been fair this year, but most manufacturers are caught with heavy stocks of earthmoving and other off-the-road equipment intended for the government's highway program. Sales normally are down in the fourth quarter, but this year they are down more than expected.

Foundry Equipment — In the

first seven months of 1957, new orders ran about 8 per cent below the average monthly level of 1956. Einar Borch, vice president of National Metal Abrasives Co., Cleveland, and chairman of the Statistical Committee of the Foundry Equipment Manufacturers Association, says the industry expects the downtrend to continue into the fourth quarter. Major reason: Auto companies are winding up their expansion programs. But the industry feels there is a definite possibility of an upturn next year because inquiries are at a good level.

Heavy Electrical Equipment — "We didn't expect much of an upturn in the last quarter, and we're not going to get one," says the vice president and director of sales of one large producer of electrical equipment. But this industry has been running at near capacity for several years; there isn't too much headroom left. Shipments this year will be about the same as last year's, and new orders are expected to continue on the high level of the last couple of years. There has been some backing off since early this year, but it isn't enough to affect operations significantly.

Industrial Furnaces — A few manufacturers recently have felt a pickup over the second and third quarter rate, but generally the industry will fall about 25 per cent shy of the 1956 level of new orders this year. "That is not too bad," says Robert E. Fleming, executive vice president of Industrial Heating Equipment Association, "when you consider how high the last two years have been." Some manufacturers report business will pick up in the first half of next year, followed by a good rise in the third quarter.

Orders for steelmaking furnaces will be down somewhat next year because of the rounding out of the steel industry expansion program, but modernization programs will keep orders at a good level.

Machine Tools—This industry is reflecting the slump more than most. Shipments will still be at high levels this year, compared with the post-World War II average, but new orders have declined rapidly since the first quarter. Outlook for the fourth quarter is an average of $30 million a month in new orders, with shipments of about $55 million to $65 million a month. The backlog will probably sink below the four-month level prevailing in the third quarter, although producers will try to meter production to match new orders as far as commitments will allow.

Companies' reports for the fourth quarter differ. Some are still working a 58-hour week, while others are hard put to maintain 40 hours. Some are booked into the second half of next year, while others can see no farther than a quarter ahead. The big trouble is the almost complete lack of buying by auto companies.

The bright spot is inquiries. The company which reports a softness in this area is the exception.

Material Handling Equipment—There has been some upturn in this industry, but not as much as expected earlier this year, members report. Says L. West Shea, managing director of the Material Handling Institute Inc.: "There is a general feeling of hopeful expectancy. There are more quotations outstanding now than at any time in the past year. The fourth quarter will be better than the third and about equal to the second."

Mining Equipment — Sales are tied almost directly to coal. Although coal production this year will be about equal to last year's, the industry has revised downward its original output prediction from 532 million tons to 500 million, dampening the capital spending picture. Little, if any, improvement is seen for 1958. Coal production will be about equal to 1957's, but heavy buying of mining equipment in the past two years may take some potential customers out of the market.

Steel Mill Equipment—The big expansion in the basic steel industry is past the peak for this round (see STEEL, Sept. 16, pp. 79-81), so there has been no particular upturn for makers of this equipment. But business is still good, and in some cases better than it was last year. Some programs have been delayed because of tight money and uncertainty about the business outlook, but one producer feels that the next two or three years will be "average good years."

New Gray Iron Uses

Foundrymen think they can be developed through marketing program with aid of society

MEMBERS of the Gray Iron Founders' Society are banking on a marketing program now underway to develop new uses for their product. The lower business volumes of regular customers are expected to hold 1957 gray iron tonnage to its lowest figure since 1954 (see STEEL, Oct. 7, pp. 129-30).

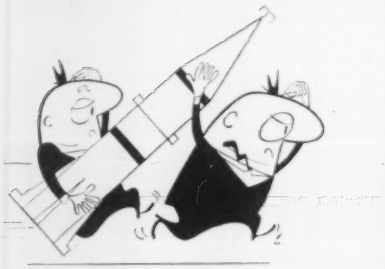
GIFS estimates 1957 tonnages at 13.1 million tons. A good fourth quarter could top that figure but a poor last quarter could shade it to 13 million even, the society adds. It estimates that 130,000 tons of ductile iron will be produced this year.

Market Aids—In developing new markets, gray iron founders will be aided by a customer handbook to be distributed about Jan. 1, 1958, and a proposed three-day sales training clinic.

Awards — Three members were honored "for outstanding service" at the GIFS meeting in Chicago, Oct. 9-11. Hermann P. Good, division manager, Textile Machine Works, Reading, Pa., received the Gold Medal Award. Plaques were presented to C. H. Meminger, manager, Foundry Div., Posey Iron Works Inc., Lancaster, Pa., and George L. Nimocks, office manager, Dayton Foundry, Hollydale, Calif.

Nearly 100 entries were submitted in the 1957 design contest. First place winner of $500 was Harold R. Warsmith, Jeffrey Mfg. Co., Columbus, Ohio, for a chain block link. Second place and $250 went to E. S. Frens, General Electric Co., Schenectady, N. Y., for a compressor discharge casing.

Officers — Re-elected were the society's president, J. Scott Parrish Jr., Richmond Foundry & Mfg. Co. Inc., Richmond, Va.; vice president, Albert M. Nutter, E. L. LeBaron Foundry Co., Brockton, Mass.; and secretary, A. H. Renfrow, Renfrow Foundry, Los Angeles. C. R. Garland, W. O. Larson Foundry Co., Grafton, Ohio, was elected treasurer. Donald H. Workman, Cleveland, was renamed executive vice president.



Pentagon Wants Industry To Up Quality

REJECTION rates on a few missile components have run as high as 90 per cent. "Manufacturers of electronic parts must learn that meeting commercial standards is not meeting those of missile circuitry," says the Air Materiel Command.

The Pentagon is out to see that all industry catches up fast with its standards. Spokesmen warn that the current drive to hold down Defense Department spending will be the whip to make industry toe the line. Bigger contracts for missilemakers are in the offing as we speed up our production (STEEL, Oct. 7, p. 119), but fewer firms may get orders as Defense tightens up its whole procurement system.

The weapons system of granting huge contracts to one prime contractor is here to stay. Defense is also demanding that the primes make their subcontractors live up to standards.

"I cannot stress too strongly the paramount needs of the ballistic missile program for reliability to an optimum degree never before attained," comments Brig. Gen. Ben Funk, AMC deputy director for ballistic missiles.

Coming: New Era in Defense Relations

General Funk's expression heralds a new era in relations between industry and the Defense Department. There has been a time when you could treat the contracting officer as your buddy: He understood your problems and was willing to bail you out, if he could. But that's all over if the Pentagon is serious.

Another phase of the new look: When you contract with the government, look out. That's a warning from F. Trowbridge vom Baur, the Navy's general counsel. He thinks industry has been particularly lacking in understanding, for example, that when it takes a contract it is obliged to proceed with a change order even though it might be some time before it will be paid for the increased cost. The firm will have to finance the cost itself, and it can't charge off the interest involved.

Mr. Vom Baur wants all contractors to keep their lawyers handy when doing business with the government. He also recommends your lawyer have a thorough understanding of the decisions of the Armed Services Board of Contract Appeals.

Sputnik Is the Reason

Although you'll hear as much the next session of Congress as the last about the excessive difficulty of getting contracts from the government and the usual charges of preference to big business, don't expect any changes in the direction of easier profits for your firm. Sputnik has put the Defense Department on a war footing without a wartime supply of money.

Relations with industry will be tightened. The aviation industry will scream for the next three months about cutbacks in progress payments, but it isn't going to do any good. The bright side of that: Firms which are able to play along with Defense's edicts should come out of the trouble better off. Defense will know they can be counted on in an emergency. Talk among aircraft people that they will have to slow down production because of the slowdown in money is not well received at the Pentagon.

Some sources are ready to charge aircraft manufacturers with wanting to slow down the transition to missiles to keep their profit margins up. But the charge is probably exaggerated. Missile enthusiasts in the armed forces believe they have at last been vindicated by sputnik. They are prepared to forgive and forget if the manned aircraft proponents will shut up and take their medicine. Continued statements that "manned aircraft will be our greatest defense for the next decade" are openly laughed at by those willing to risk their jobs to get what they believe to be the truth across to the public. (The President and most top Pentagon men still defend manned aircraft.)

McElroy's First Act Looks Good

New Defense Secretary Neil McElroy is making a good impression with most at the Pentagon. Although he didn't jump onto the missile bandwagon, he did indicate he is "more than sympathetic" to "speculative research." Charles Wilson was not. Missilemen are figuring on getting all the money they want from Congress. They'll need a sympathetic defense secretary to allow them to spend it the way they wish.

On the more immediate business of catching the Russians, Mr. McElroy promises to eliminate bottlenecks from the missile program. One area will be the tightening up of government contracts, already mentioned. Otherwise, he will speed up our testing program and bring in some quick decisions on competing missiles. One Pentagon source expects the Titan ICBM project (it's reportedly running a bad second to the Atlas in development) to be canceled soon. Since the Titan supposedly incorporates more advanced theory than the Atlas, it will be a tough decision to make.

The choice between the Jupiter and Thor has been put off for more testing of both, but you can expect a decision before the end of the year. With the Thor closer to mass production, it is probably your best bet.

For Top Metal Cutting Efficiency

. . . Cincinnati gives you a choice of 5 Cutter and Tool Grinders

Whatever is good for the cutting edge of your expendable tools is good for production. And CINCINNATI® Cutter and Tool Grinders are certainly good for the cutting edges of all types of milling and die sinking cutters, reamers, hobs, taps and others. There are 5 machines in the Cincinnati group. They constitute an exceptionally strong secondary line of production equipment for machine tools of all types. Sweet's Machine Tool File contains brief specifications, and complete data may be obtained by writing for catalogs.

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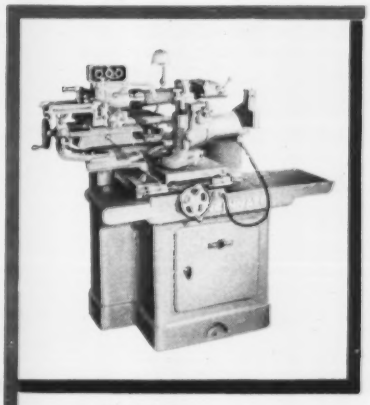
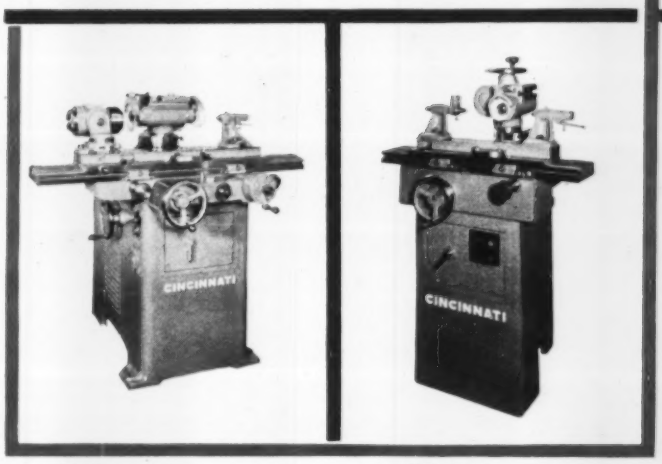


CONTOUR
Cutter and Tool Grinder
Catalog No. M-1918-1



NO. 2
Cutter and Tool Grinder
Catalog No. M-2004

NO. 1
Cutter and Tool Grinder
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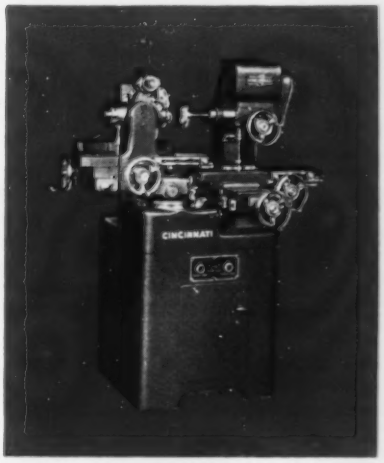

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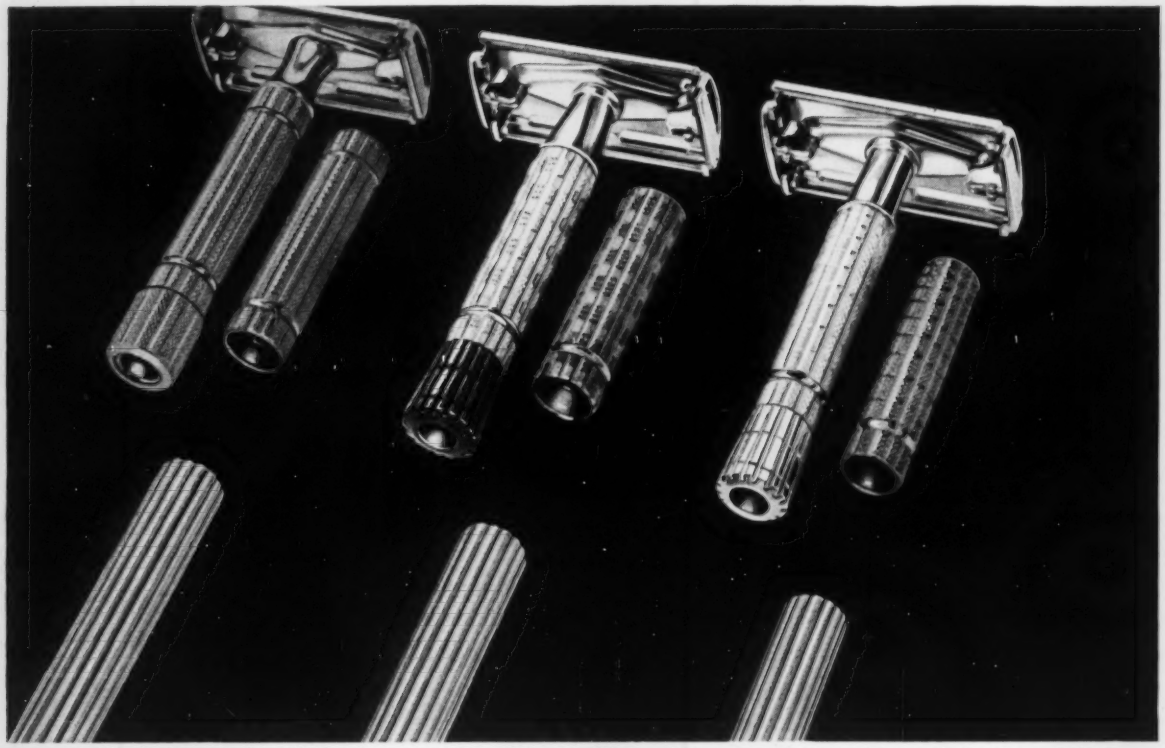

Handles for the gold-plated (left) and standard "Heavy" (center) Gillette safety razors are made from Anaconda leaded commercial bronze special-shape seamless tube, .4525″ O.D., .371″ I.D. "Regular" model (right) is of commercial bronze .395″ O.D., .324″ I.D.

Gillette shaves costs with Anaconda special-shape tubes

The problem: The Gillette Safety Razor Company, Boston, Mass., formerly used drawn shells for the handles of its famous line of razors. Press-fit assembly of components called for very close tolerances and suppliers of the drawn shell had difficulty in controlling the dimensions to the accuracy required. Rejects and production delays were becoming a costly problem to Gillette, and there was also excessive waste of material in trimming the shells after the knurling, grooving and rolling operations.

The solution: American Brass Company representatives suggested the use of special-shape (fluted) tubes to meet the tolerances required—in alloys suitable for the machining operations. Gillette tried the idea and now uses Anaconda special-shape tubes for handles of three models.

Long lengths of the tube are fed into high-speed, multiple-spindle machines which automatically convert the tube to razor handles ready for the plating room. Production is greatly increased, rejects and waste material are reduced to a minimum, and the uniformity of the handles simplifies assembly. Most important of all to the Gillette Safety Razor Company is the improved quality of the finished product.

Save Material and Production Costs: Special-shape seamless tubes—of copper, copper alloys or aluminum—in standard lengths, or cut to specified lengths, can save several steps in arriving at a finished product. The American Brass Company's French Small Tube Division are specialists in producing small tubes (up to ¾″ O.D.) of special design and, in addition to maintaining a wide range of stock dies, are ready to cooperate fully in the development of new shapes to meet specific requirements.

For Action: Contact our nearest District Sales Office or send a sample, drawing or description, estimated quantity, kind of metal required and other pertinent data to: The American Brass Company, French Small Tube Division, Waterbury 20, Conn.

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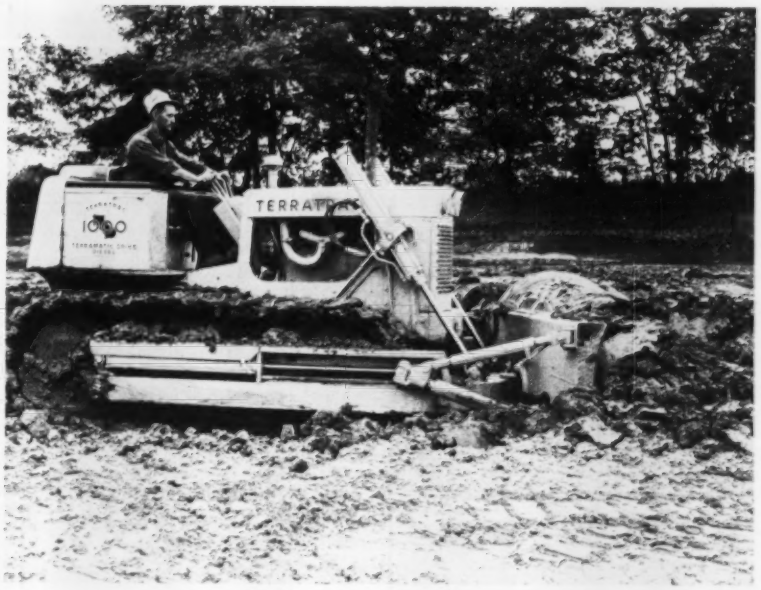


This crawler tractor is a new product at Case

Diversification Pays Off

J. I. Case Co. marriage to American Tractor Corp. prompts new line of industrial machinery, boosts sales, and gives the 115-year-old implement maker a bright future

A NEED for diversification to bolster sales prompted J. I. Case Co., Racine, Wis., to add a line of industrial products. Result: A 23 per cent sales increase.

Wheel and crawler tractors and earthmoving equipment spearheaded the company's entry last January into production of machinery for heavy construction, road building, mining, and logging.

By diversifying, 115-year-old Case was following a pattern set by several other large implement companies.

The Marriage—In 1956, Case acquired American Tractor Corp., Churubusco, Ind., and expanded its line. Marc B. Rojtman, president of American Tractor, joined Case as its executive vice president and general manager. Much of the program's progress is attributed to him.

Everybody's Happy—Sales of American Tractor in 1956 were $10.2 million. In nine months since the merger, its sales have soared over $20 million. Estimate for 1958 is an industrial volume of $45 million to $50 million. Current annual rate: $35 million. The third quarter began with the largest backlog of the year. Within 21 months after the merger, industrial equipment is expected to equal 60 per cent of Case's total agricultural volume at the time of joining forces.

Total company sales for the nine months ended July 31, 1957, were $78,898,236, compared with $64,102,899 in the same period of '56. As a result, the cumulative net loss for nine months was reduced to $993,805, against a net loss of $4,403,389 (before tax credit) for the year-earlier period.

Children—The new Case "12-month line," not anticipated at the start of the current fiscal year, is expected to provide stable year-round markets. It was introduced to dealers late in July and resulted in a record influx of orders.

The industrial line covers 15 gasoline and diesel-powered tractors, ranging from 40 to 80 hp in rubber-tired equipment, and up to 100 hp in crawler models. Together with over 50 combinations of matching backhoes, loaders, bulldozers, angledozers, scarifiers, fork lifts, trailers, and winches, this group gives Case an extensive industrial tractor line. A new product is being introduced about every four or five months.

New Relatives—Some broadening of the Case dealer setup was necessary. The company expects that construction machinery will be handled by about 1200 of its 3000 farm equipment dealers. Light equipment dealers have been signed to handle the medium-size wheel and crawler line, and heavy equipment dealers have been franchised to sell the construction and road building tractors.

To handle expanding sales and assist dealers and retail customers, Case established a wholly owned financing subsidiary—J. I. Case Credit Corp. Another wholly owned subsidiary, J. I. Case International S.A., co-ordinates the overseas program.

New Equipment—The new line required several production facility changes. The company's Burlington, Iowa, plant was re-equipped to make industrial products. Another plant in Racine, closed for some time, will be opened late this year for industrial production only. The Churubusco plant of American Tractor continues at full scale output.

Before the merger, American Tractor had 500 employees. Current employment at the Churubusco and Burlington plants totals 1500. By Jan. 1, 1958, with the Racine plant in production, it will reach 2000.

The Future—Retail farm machinery sales this year are over 20 per cent ahead of 1956's, but sales of agricultural products to dealers up to July 31 were only slightly ahead of last year's, largely as a result of preseason production. Improvement is expected next year.

Steel Product Cost Analysis Shows:

FIGURES IN TABLE ARE PERCENTAGE OF NET SALES

First results of American Steel Warehouse Association's study of distributors' costs are shown at the right. Selected at random from ASWA's data on first and second quarter operations, the figures show how individual firms rate the profitability of products they handle.

Using ASWA's new accounting system, distributors determine how much they spend for each warehouse function. Then they assign a share of the function's cost to each product, expressing this as a percentage of the product's net sales. If the costs attributed to a product exceed its sales (100 per cent), there's need for better efficiency or, failing that, elimination of the item from stock.

	Region[1]	Cost of Goods	GROSS PROFIT	Order Processing	Slitting	Shearing	Sawing
Carbon H-R Bars	1	64.81	**35.19**	1.78		0.02	0.61
	2	64.78	**35.22**	0.78		0.1	0.52
Carbon Cold Finished Bars	1	65.65	**34.35**	2.55			1.05
	2	74.87	**25.13**	2.03			
	3	70.66	**29.34**	3.29			0.82
Carbon C-R Sheets and Strip	3	79.32	**20.68**	1.55	3.84	0.85	
	3	72.32	**27.68**	0.71	2.33	0.98	
Carbon Plates	1	60.88	**39.12**	1.7		2.41	
	2	61.55	**38.45**	0.62		0.97	
Carbon Structurals	1	64.56	**35.44**	2.7			
	1	68.76	**31.24**	0.96			1.22
	6	71.9	**28.1**	0.59			
Carbon Mechanical Tubing	2	60.11	**39.89**	1.21			1.47
	3	59.09	**40.91**	2.6			0.63
Alloy Steel	1	68.64	**31.36**	1.73			0.28
	5	68.	**32.**	1.45			0.06

[1]Regions: 1. Atlantic States 2. Great Lakes States 3. Central States 4. Southern & Texas 5. Rocky Mountain 6. Pacific States

Figures Talk to Warehousers

"DISTRIBUTION cost analysis is revolutionizing our industry," exclaims Robert G. Welch, executive vice president, American Steel Warehouse Association, Cleveland.

Although he's cautious in appraising initial results of the association's new method of cost accounting, Mr. Welch explains: "For the first time we have information about our costs by product and service performed. This system shows us where to concentrate our selling effort, where to concentrate our cost reduction activities, and where to invest most profitably our capital for future expansion."

First Report—ASWA's initial report on the cost analysis project inaugurated last year (see STEEL, Mar. 19, 1956, p. 89) covers the first two quarters of 1957 and contains figures supplied by 25 firms. Shown above are statistics selected at random from seven of the report's 35 product classifications and 18 of its 37 cost headings. The figures aren't "typical," and they don't show the full range of profits or losses incurred by distributors in handling the specified products. They demonstrate only that there are great variations in the costs of such functions as material handling, delivery, outside selling, and general administration. They show how two firms in apparently similar circumstances (same product, same gross) can have different results: One will retain a substantial profit while the other dissipates his margin entirely.

As the table reveals, one Great Lakes distributor almost doubles the net profit of an Atlantic States firm on sales of carbon hot-rolled bars. He does this through substantially lower costs for order processing, material handling, and selling, and despite higher costs for general administration.

Regional Differences—It's important to remember, however, that costs vary widely by area because of differentials in labor rates, transportation charges, and the type of industry served. Such costs are often beyond the warehouse operator's control.

If both firms were in the same area and did about the same volume of business, it's possible that improvements in order processing and other functions would enable the one distributor to match the other's profits. But here, again, it's necessary to assume that the companies are similarly situated in respect to competition. If one enjoys a dominant position while the other has to compete with four other distributors, it would be folly

Where Distributors Can Boost Profits

Burning	Material Handling	Delivery	Inventory Space Cost	PROFIT AFTER PRODUCT COSTS	Outside Selling	Inside Selling	Admin. Selling	PROFIT AFTER CUSTOMER COSTS	Gen. Admin. and Acct.	Sales Disc.	NET PROFIT BEFORE TAXES
	5.65	2.72	1.45	**22.35**	3.67	1.85	1.58	**14.33**	1.96	0.39	**11.98**
	1.8	1.92	0.92	**28.79**	1.36	0.7	0.63	**26.04**	2.94		**23.1**
	4.85	6.06	1.	**17.25**	3.54	5.43	1.52	**6.14**	1.61	0.43	**3.69**
0.81	1.85	3.92	2.22	**13.**	7.37	3.56	1.66	**0.6—**	2.67		**4.2 —**
	3.48	2.75	1.77	**15.94**	9.74	5.31	0.14	**0.58—**	6.55		**7.38—**
	3.68	1.67	0.82	**7.4**	2.13	1.75	2.04	**1.22**	2.96		**1.87—**
	5.5	4.74	1.35	**10.12**	2.05	1.15	0.14	**6.39**	1.42		**4.59**
2.83	7.84	2.13	0.48	**19.59**	3.	1.29	1.4	**13.28**	4.5		**7.72**
2.65	1.47	1.51	1.18	**29.7**	1.07	0.55	0.69	**27.34**	2.89		**24.45**
	8.07	2.11	2.93	**15.86**	3.18	2.08	1.23	**8.45**	4.63		**3.34**
	3.4	1.9	0.2	**22.8**	1.99	0.75	1.49	**18.08**	1.87	0.39	**15.82**
	1.94	1.34	0.83	**21.23**	2.59	1.34	0.37	**16.49**	0.85	0.28	**14.59**
	0.58	2.01	1.48	**32.64**	2.11	1.07	0.74	**28.63**	2.84		**25.79**
	1.03	1.06	3.89	**29.55**	6.8	3.54	0.21	**18.06**	4.4		**13.6**
	3.52	4.13	1.1	**17.8**	3.23	3.67	1.39	**9.06**	1.56	0.43	**6.73**
1.	2.5	0.7	1.25	**24.3**	3.46	0.76	0.47	**19.3**	3.06		**12.8**

Because of space restrictions, certain items of lesser importance to the total analysis have been omitted.
Headings included in ASWA report but not shown above: Purchasing; Machine Processing; Upcut & Roller Leveling; Other Processing; Receiving; Order Filling; Shipping; Advertising; Total Product Costs; Credit Authorization & Collection; Bad Debts; Total Customer Costs; Carrying Costs; Total General Costs; Tons Shipped; Number of Employees; Manhours Worked; Investment Return Before Taxes.

to suggest that he should reduce his selling expenses.

Comparison of costs for the two firms selling carbon plates suggests that one is spending too much for material handling, selling, and general administration. Examination of figures supplied by the sellers of carbon mechanical tubing indicates that the Central States distributor has a problem with outside selling costs. In handling alloy steel, an Atlantic States warehouse has excessive delivery expenses. Perhaps he's shipping too far, delivering small orders too frequently.

No Advice—Whatever the problem, ASWA believes the distributor must find his own way. If he can't turn debit into credit by cleaning up internal operations, by improving truck loading or routing, he might consider dropping the unprofitable line.

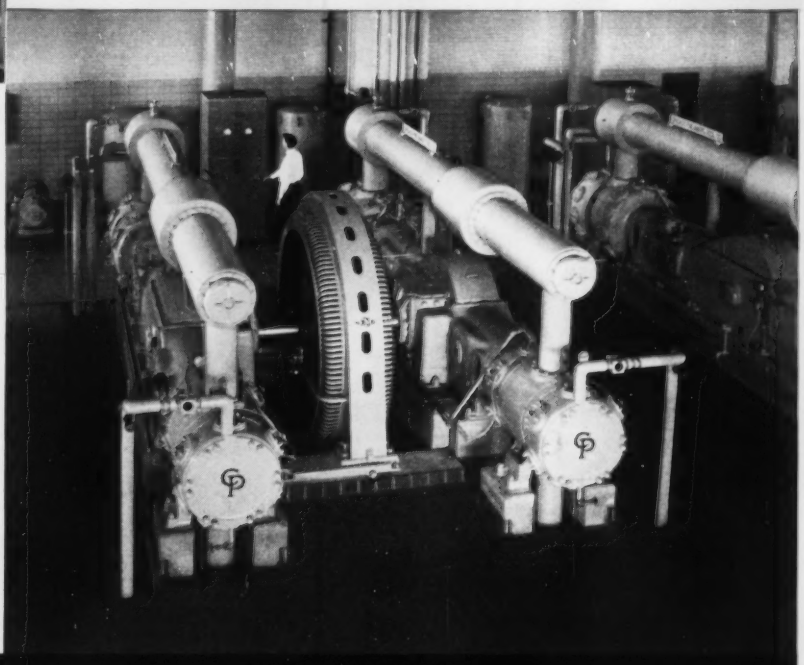
Although Mr. Welch emphasizes the futility of trying to compute "average" costs for warehouse functions on the basis of figures now available, he believes it may soon be possible to assemble such statistics. He estimates that 120 ASWA members are working with the new accounting system.

Giving impetus to joint sponsorship of distribution cost analysis by ASWA, the National Association of Aluminum Distributors, and the Copper & Brass Warehouse Association was the realization that warehouse earnings were lagging behind those of other major industrial groups. Armed with the facts that functional accounting provided, the distributors were able to reverse the trend toward lower earnings. Since 1954, they have increased their percentage of return on net assets (after taxes) from 3.5 to 13.9, the level reported for manufacturers and steel producers.

Other Benefits—No less important to warehouse operators than determination of product line profitability will be evaluations of profitability in terms of customers, territories, and order size. When they know the facts, says Mr. Welch, distributors can greatly improve the productivity of their salesmen. This is essential, he continues, because today's salesman receives twice as much money as he did in 1948 but sells about the same tonnage. Instead of encouraging a man to sell every account something, they'll emphasize profitable sales and larger orders. They'll know how often a man should call, when he should contact his customers by telephone, whether he should establish a residence in his territory, and whether his territory is too big or too small. The day is not far off, says Mr. Welch, when distributors will stop chasing gross profit and start paying salesmen on the basis of net revenues their sales produce.

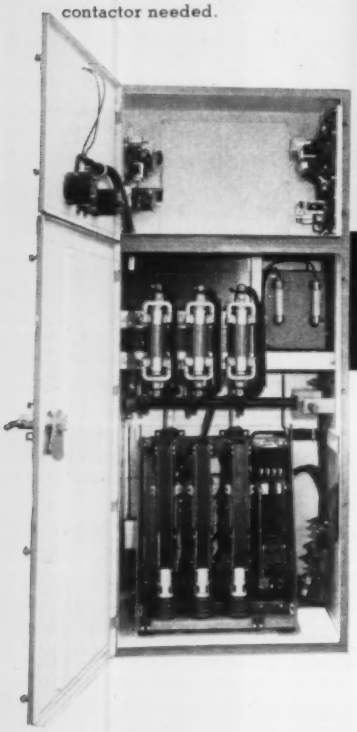
• *An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.*

The most complete synchronous motor protection you can buy



Above and at right • Four EC&M 1000 HP, 2300 Volt Synchronous Starters on air-compressor drives in Chrysler Corporation's new Ohio Stamping Plant at Twinsburg. Purchased and installed by Hatfield Electric Co., Cleveland, Ohio.

Below • Inside view of starter showing compact arrangement of fuses and contactor. The three arc shields slide out for quick access to both front and rear contacts — no draw-out of contactor needed.



EC&M 2200-4800 VOLT STARTERS

• A push of the "start" button gives you complete protection during starting and running—*plus* EC&M *fully automatic synchronization.* Throughout the entire sequence, motor windings are completely protected and synchronization occurs at the most favorable time. Should the motor pull out of step because of voltage dip or overload, the field is automatically removed. Re-synchronization occurs when the motor re-accelerates the load. Short circuit protection is provided by current-limiting power fuses working in conjunction with EC&M's *"certified"* high-interrupting-capacity ZHA air-break contactor.

For complete details...

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A DIVISION OF THE SQUARE D COMPANY

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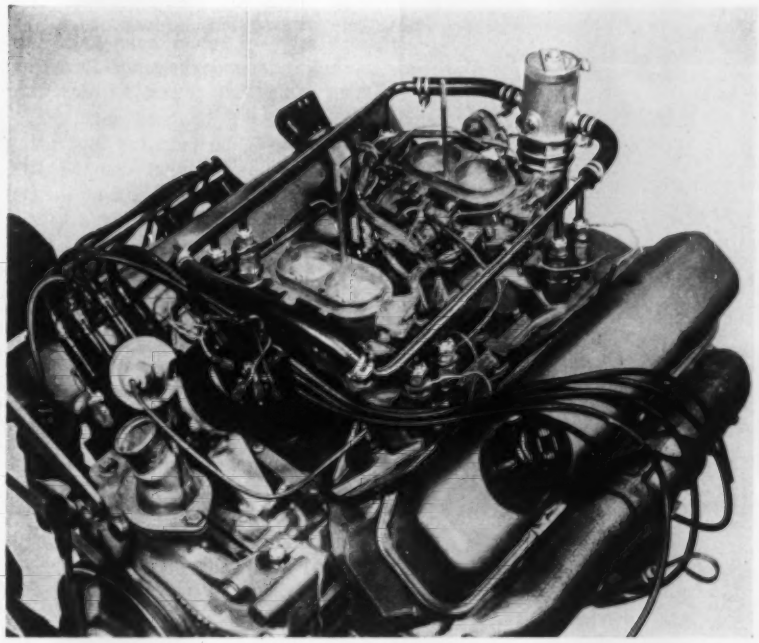

Chrysler Corp.

What Killed Fuel Injection

- High speed ban.
- High cost.
- Mechanical difficulties.

Economy trend favors multiple carburetors as . . .

Fuel Injection Falters

CAR BUILDERS' interest in fuel injection has faded.

Less than a year ago, every car division in Detroit seemed to be scrambling for a fuel feed system.

Then the Automobile Manufacturers Association cracked down on the advertising of horsepower ratings. Since car buyers tend to associate fuel injection with speed, most plans didn't get out of low gear.

Horsepower ratings are up, but they aren't being emphasized and only three producers will have fuel injection in '58.

Who Has It—Pontiac and Chevrolet will continue to offer adaptations of the system developed by GM's Rochester (N. Y.) Products Div. Chrysler Corp. will make its version of the Bendix unit available on sports models.

Chevy's job is scheduled only for the 283 cu-in. engine. Pontiac says its injector is available on all models, but it expects to install them only on the Bonneville sports series.

Who Stopped It—American Motors Corp. has dropped its Bendix system which appeared briefly on the 1957 Rambler Rebel.

Relief—Most companies seem to be relieved by the halt of the fuel injection hassle. The systems were far too expensive to produce in limited volume.

While injectors do give some additional fuel economy (Pontiac says 2 to 3 mpg more) and better throttle response, it's a pretty low return on a high priced investment.

Costly—Last year, Chevy's injector was listed at $484. It's not likely to be much less in 1958. Pontiac's unit also will be in that area. It's rumored that Chrysler's price is around $450, although AMC priced its Bendix injector at $395.

Edward N. Cole, Chevy's general manager, says the division sold 2570 fuel injection units this year. He adds that fuel injection as a replacement for the carburetor is a long way off.

Want Carbs — Four-barrel carburetors are simpler to make and give better performance. One set can be cut out for cruising economy; all four barrels can be used for full power.

Choices—The attention of engineers seems to be centering on the Bendix and GM systems. Chevy's version of the Rochester unit mechanically measures a shot of fuel which is sprayed under pressure into injection ports.

Two separate castings replace the regular intake manifold. The lower iron casting serves as the top cover of the engine, the upper aluminum casting mounts the air induction and fuel metering systems.

Pontiac has adapted the system by adding an extra filter and an air metering device, so both fuel and air are measured before being mixed and injected into the cylinder.

Chrysler—The Bendix Electro-

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Packard Introduces Hawk

ENGINE

Type: Supercharged OHV V-8
Displacement: 289 cu in.
Compression ratio: 7.8:1
Carburetor: 2 barrel
Torque: 333/3200 rpm
Horsepower: 275/4800 rpm

DIMENSIONS

Wheelbase: 120.5 in.
Length: 204.6 in.
Height: 54.75 in.
Width: 71.3 in.
Tires: 8.00 x 14
Axle ratio: 3.31:1*

*Automatic transmission. Overdrive is 4.09:1, with 4.27:1 optional.

jector, now offered by Chrysler, is faster because it measures time instead of fuel.

Fuel is kept in the injector under 20 psi. When the accelerator is depressed, an electronic "brain" measures temperature, throttle pressure, altitude, and engine load.

The "brain" translates the data into the engine's fuel needs and sends an electrical impulse to open the injector long enough to squirt the correct amount of fuel into the cylinder.

The system is accurate to one thousandth of a second. Chrysler has added a fuel filter to the Bendix unit and has immersed the fuel pump in the gas tank to keep it clean.

Finicky—Fuel injection systems contain many complicated parts. They can get out of whack easily. Precision parts make for high costs.

The return to economy in car prices and operation is beginning. As long as the trend continues, fuel injection will take a back seat to less expensive, trouble-free carburetors.

Steel Buyers Cautious

Since there's little delivery lag, car builders are letting steel mills and suppliers carry inventory for them until it's needed. Purchasing agents indicate the Big Three are trying to keep stocks at a 15 to 20 day level.

October deliveries show Chrysler, Ford, and GM are a bit ahead of earlier commitments, but all three are planning slight cutbacks in December.

Besides having better uses for inventory dollars, there are two other reasons why the auto companies aren't buying according to old patterns.

First — Dealers have gained so much independence since 1956 they can cancel car orders without fear of reprisal if demand sags.

Second—The industry is waiting to see what contract demands the UAW will come up with at its Detroit conference at the end of the year.

Chrysler Builds in St. Louis

Chrysler Corp. says it will build an assembly plant about 20 miles southwest of St. Louis.

The facility replaces the Plymouth body and assembly plants in Evansville, Ind., which will close down at the end of the 1959 model run, according to W. C. Newberg, automotive group vice president.

The two Evansville plants are 30 years old and employ 5000 persons. The St. Louis operation will cover 1.3 million sq ft and will employ about 3500 persons. (Rumor: It'll be highly automated and may be set up for the assembly of unitized bodies.) It will be ready for 1960 production.

Norman Matthews, UAW vice president, has bitterly contested the Evansville shutdown.

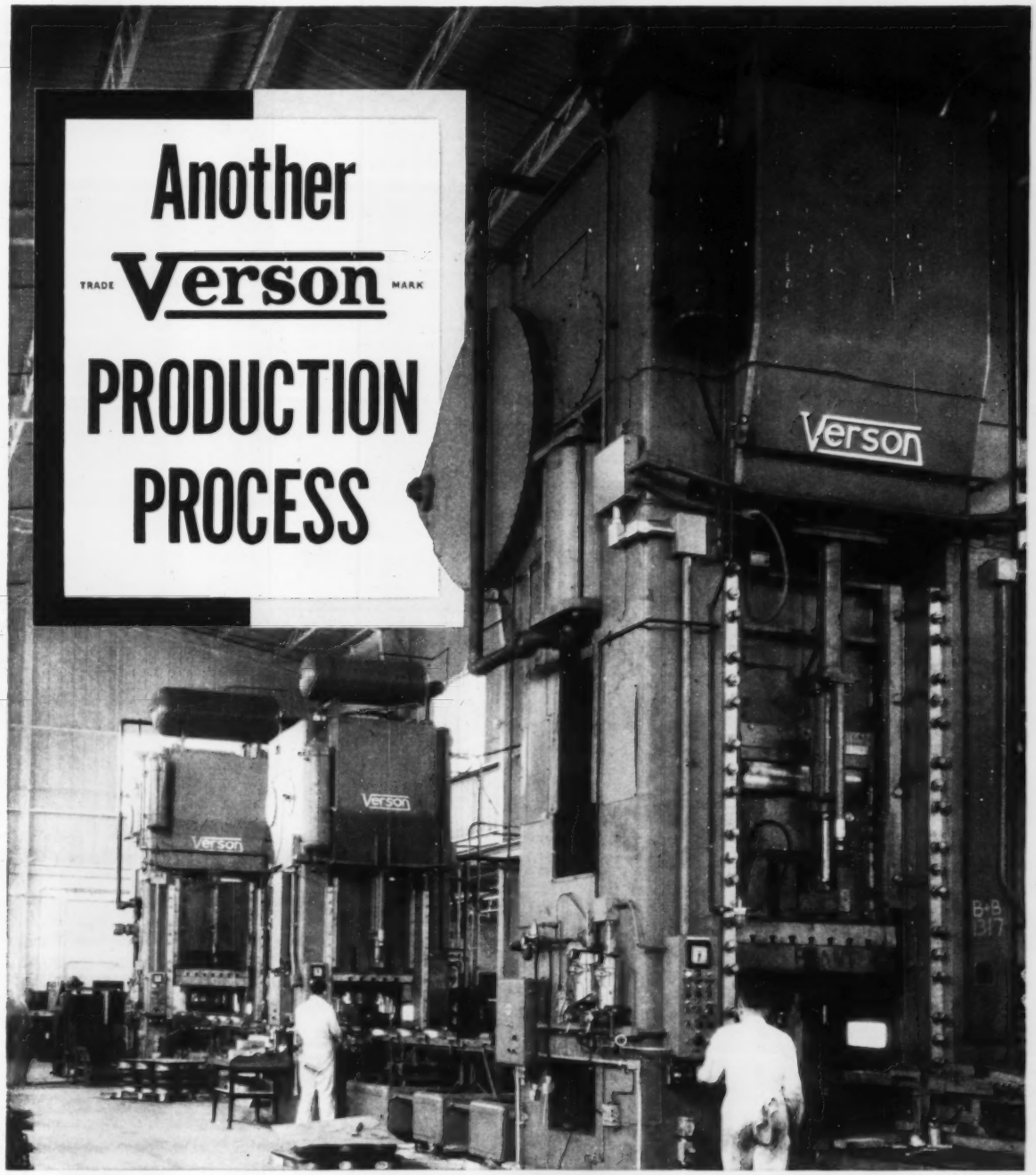
U. S. Auto Output

Passenger Only

	1957	1956
January	642,089	612,078
February	571,098	555,596
March	578,826	575,260
April	549,239	547,619
May	531,365	471,675
June	500,271	430,373
July	495,629	448,876
August	524,354	402,575
September	274,265	190,716
9 Mo. Total	4,677,136	4,234,768
October		389,061
November		581,803
December		597,226
Total		5,802,808

Week Ended	1957	1956
Sept. 14	85,816	63,798
Sept. 21	52,365	35,652
Sept. 28	51,552	43,369
Oct. 5	21,975	59,367
Oct. 12	35,949†	70,175
Oct. 17	60,500*	88,557

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.



Engineered and Developed by Verson to Make Manufacturing More Profitable

Here is a good example of what Verson engineering can do in automated press lines . . . and this is no theoretical concept . . . it is a tried and proven production process which has been in operation for one year.

Three Verson Eccentric Presses (1500, 200 and 600 tons respectively from front to rear in above photograph) are synchronized with automatic transfer and feeding equipment. The part produced is an automotive transmission drive housing.

As a manufacturer of both Transmat and automated press line processes and related tooling, Verson is well qualified to assist you in high production automatic stamping problems. For specific recommendations send an outline of your requirements. 163

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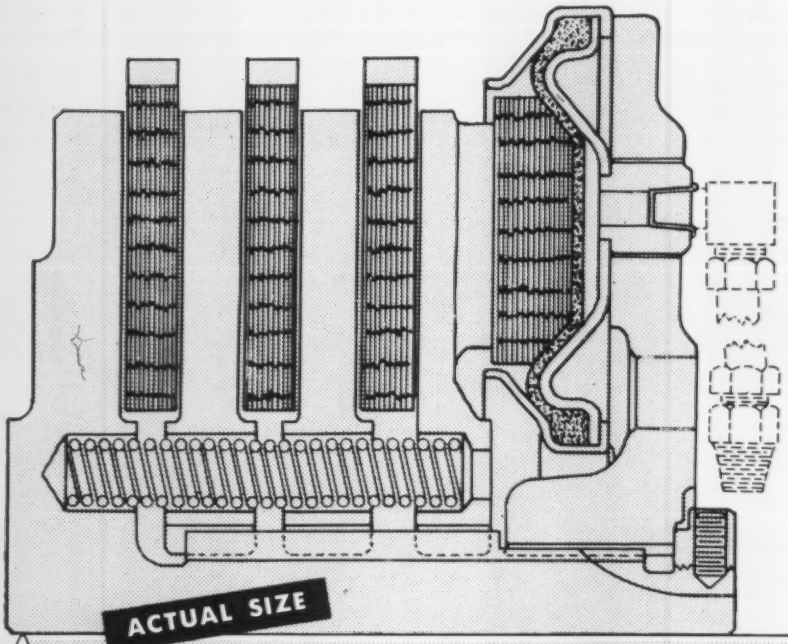
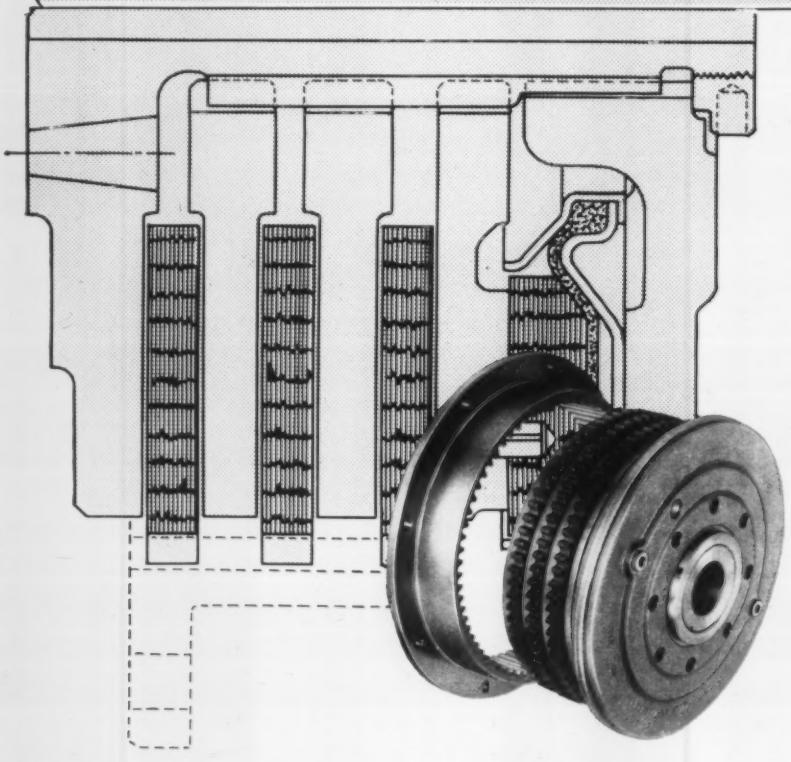


- New design permits highest capacity at up to 40% less cost than comparable remote controlled air clutches!
- Available in sizes 8, 10 and 11½ inches . . . in triple-plate, double-plate and single-plate construction . . . with maximum torque capacity of 3503 pound-feet.
- Exclusive cartridge-type diaphragm of long-lasting neoprene reinforced with nylon . . . eliminates leakage and provides long life.
- Provides constant torque capacity without adjustment . . . self-compensating for wear.
- Compact and rugged . . . with clutch mass properly distributed relative to friction area, providing long life on high energy loads.
- Narrow width permits replacement of old-style drum or band clutches.
- Suitable for air systems up to 130 pounds per square inch.

New LOW COST high capacity Twin Disc Air Clutches



The new Twin Disc 8, 10 and 11½-inch PO Air Clutches are adaptable wherever the convenience of remote air control is desired. They are currently in use on rock crushers, tractor winches, pipe-extruding machines, drilling rigs, machine tools, pug mills and other equipment.

The three new sizes extend the time-tested, job-proved line of PO Air Clutches from 8 to 36 inches in diameter . . . in torque capacities to 126,600 pound-feet.

Check your next design . . . see for yourself how PO Air Clutches lend themselves to convenient, economical remote control. Write Twin Disc Clutch Company, Racine, Wisconsin.

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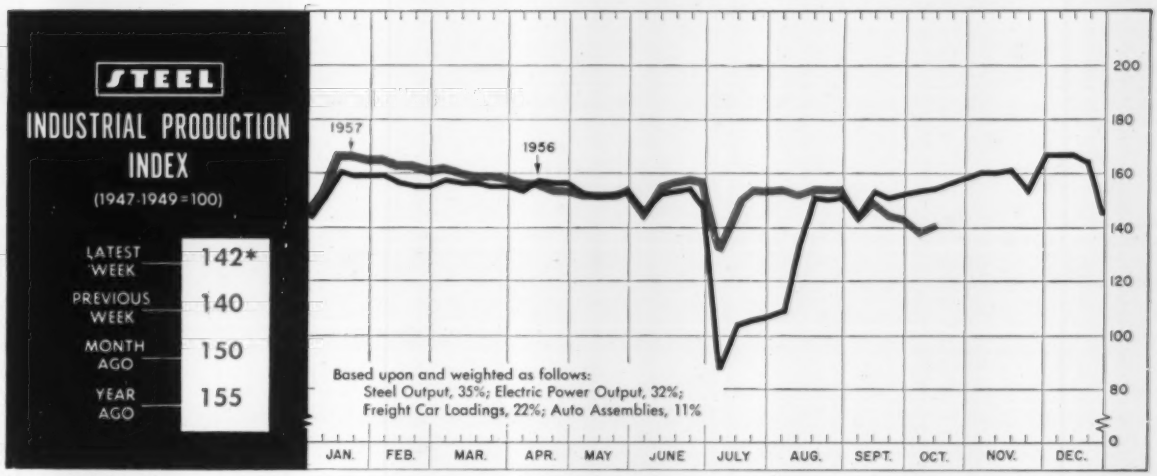
CLUTCHES AND HYDRAULIC DRIVES

TWIN DISC

Friction Clutches and Fluid Drives



*Week ended Oct. 12.

Auto Industry Calls Tune for 4th Quarter

THE TEMPO of production in the fourth quarter is more likely to be a fox trot than a Charleston. It will be determined to a large degree by the auto industry, whose products last year accounted for less than 3 per cent of the gross national product (at wholesale value).

Mind Over Matter — There are several reasons why the auto industry is in a position to call the tune. First, it is one of the nation's largest employers. Second, it has one of the largest and most complex networks of suppliers in industry. (General Motors Corp. alone has more than 26,000 suppliers without counting the thousands of secondary suppliers.) Third, it is the largest single consumer of steel mill products.

Although those factors are potent, many economic analysts believe the industry's biggest influence is psychological.

Everybody is interested in automobiles. Anyone can tell if the auto industry is having a good or bad year simply by noting how many new models are on the streets, or by reading about the deals offered to move stocks of new cars. If the public senses that Detroit is having an off year, chances are better than even that it will conclude that everybody is headed in the same direction.

Less than Spectacular—If there is no strong upward pressure in the general economy to counteract such psychology, it doesn't take too long for a reaction to set in. It's no secret that motordom has gone through two years at somewhat less than the spectacular pace of 1955. Memory being as short as it is, many persons forget that the 1956-57 level was higher than almost any year prior to 1955. And now they are faced with another year that is shaping up remarkably like its predecessor.

The most commonly heard estimate of new car sales for 1958 is 6 million units, practically the

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	2,092[1]	2,105	2,495
Electric Power Distributed (million kw-hr)	11,550[1]	11,564	11,300
Bituminous Coal Output (1000 tons)	9,905[1]	10,200	10,399
Petroleum Production (daily avg—1000 bbl)	6,800[1]	6,812	6,990
Construction Volume (*ENR*—millions)	$323.9	$333.4	$390.2
Auto, Truck Output, U. S., Canada (*Ward's*)	56,530[1]	35,248	96,986
TRADE			
Freight Car Loadings (1000 cars)	740[1]	748	823
Business Failures (Dun & Bradstreet)	261	278	253
Currency in Circulation (millions)[3]	$31,129	$31,038	$30,880
Dept. Store Sales (changes from year ago)[3]	0%	0%	+2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$24,000	$24,110	$19,676
Federal Gross Debt (billions)	$274.1	$274.2	$273.9
Bond Volume, NYSE (millions)	$27.0	$18.5	$14.9
Stocks Sales, NYSE (thousands of shares)	15,076	8,067	8,407
Loans and Investments (billions)[4]	$87.9	$86.6	$85.6
U. S. Govt. Obligations Held (billions)[4]	$25.7	$24.5	$26.0
PRICES			
STEEL's Finished Steel Price Index[5]	239.15	239.15	225.58
STEEL's Nonferrous Metal Price Index[6]	209.0	209.2	265.0
All Commodities[7]	117.5	117.5	115.0
Commodities Other Than Farm & Foods[7]	125.5	125.6	123.0

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1957, 2,559,490; 1956, 2,461,893. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

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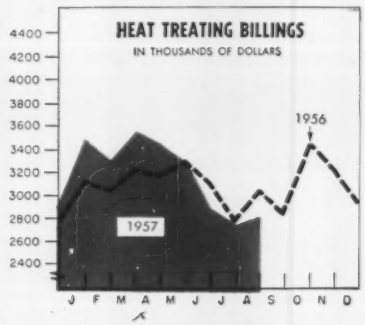
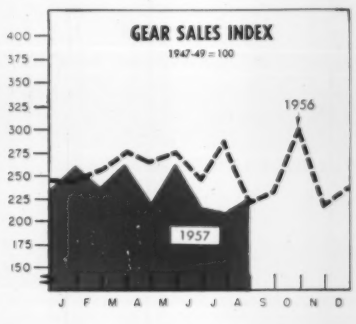
THE BUSINESS TREND



	1957	1956	1955
Jan.	3,494.7	3,116.4	2,181.0
Feb.	3,337.9	3,124.8	2,184.5
Mar.	3,571.6	3,330.9	2,599.5
Apr.	3,462.6	3,166.2	2,579.5
May	3,311.4	3,350.7	2,644.4
June	2,912.1	3,094.5	2,645.1
July	2,767.5	2,737.4	2,180.0
Aug.	2,830.8	3,136.6	2,535.6
Sept.	.....	2,832.9	2,666.8
Oct.	.....	3,442.3	2,897.2
Nov.	.....	3,205.7	2,935.7
Dec.	.....	2,931.2	2,891.1

Metal Treating Institute.



	1957	1956	1955
Jan.	259.3	245.5	140.9
Feb.	239.5	256.2	148.5
Mar.	262.4	276.5	172.8
Apr.	221.7	264.7	179.8
May	263.2	275.6	205.2
June	215.9	245.4	193.5
July	211.4	286.7	201.7
Aug.	225.8	219.5	217.6
Sept.	....	230.5	246.5
Oct.	....	299.8	227.6
Nov.	....	216.2	210.4
Dec.	....	235.7	245.5
Avg.	....	254.4	198.3

American Gear Mfrs. Assn.

Charts copyright, 1957, STEEL.

same as sales will be this year and only slightly better than they were in 1956. It means that production in the fourth quarter will be pegged at the level of the year-ago period—about 1.6 million cars. At a time when many observers feel the economy needs some added zest, it doesn't look like the auto industry can be counted on to provide it.

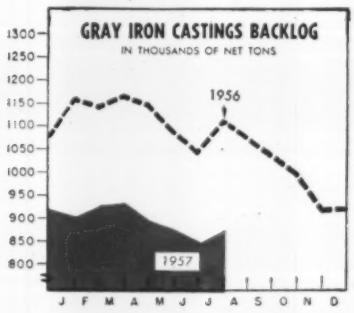
Change of Pattern—Steel buying by auto purchasing agents is well below expectations. Basing its thinking on traditional buying habits, the steel industry expected automen to build stocks of steel to meet heavy fourth quarter production schedules. Instead, the auto producers are eating even further into stocks and counting on the steelmen to meet their deadline demands. One steel salesman reports that a large bodymaker ordered 2000 tons of sheets on Oct. 11 for delivery on Oct 28. "We had to call the mill and get it on schedule that afternoon to make delivery on time," he adds. A year ago the order would have been turned down.

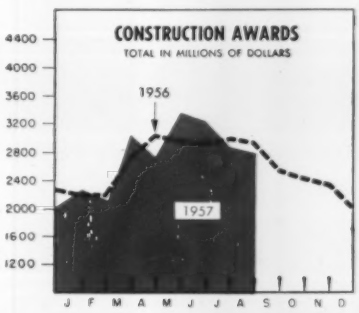
Capital equipment buying is slack, too (see Page 42). One machine tool company president told STEEL: "I don't see how the auto people can possibly come out with much new in 1959. They have about 30 days left to order tooling for next year, and there is no sign they are going to do it."

New Models Boost Index

It becomes increasingly clear that the level of STEEL's industrial production index will depend almost entirely on the auto industry during the fourth quarter. During the week ended Oct. 12, the index advanced 2 points to 142 (1947-49 = 100), strictly the result of a buildup in 1958 model cars. The industry will increase its strength until well into December.

One of the big surprises this fall has been the relative weakness in the electric energy industry. Weekly output of electricity is ahead of the year-ago pace, but the gap is narrowing. During the week ended Oct. 5, it measured 11.564 billion kw-hr, just 2 per cent above the pace of the corresponding week last year. It is the smallest gain in several years, comparing with 5 to 6 per cent earlier this year and about 8 per cent in 1956. If seasonal patterns prevail, the trend will reverse itself before this month is over.





	Shipments 1957	Shipments 1956	Unfilled Orders* 1957	Unfilled Orders* 1956
Jan.	1,213	1,250	905	1,158
Feb.	1,103	1,215	931	1,141
Mar.	1,133	1,255	935	1,163
Apr.	1,120	1,218	899	1,145
May	1,112	1,236	880	1,086
June	1,058	1,152	853	1,041
July	954	763	880	1,109
Aug.	....	1,103	....	1,074
Sept.	....	1,110	....	1,037
Oct.	....	1,275	....	996
Nov.	....	1,176	....	917
Dec.	....	1,109	....	920
Total	....	13,862		

*For sale. U. S. Bureau of the Census.

	Total 1957	Total 1956	Building 1957	Building 1956
Jan.	2,299.6	2,221.1	1,730.7	1,596.5
Feb.	2,161.0	2,229.5	1,695.5	1,694.9
Mar.	3,078.0	2,769.5	2,199.7	2,250.3
Apr.	2,776.4	3,045.5	2,069.7	2,392.3
May	3,399.5	2,980.2	2,416.8	2,317.3
June	3,243.5	2,947.5	2,341.5	2,226.5
July	2,900.7	3,013.0	2,247.6	2,217.5
Aug.	2,818.0	2,953.3	2,291.8	2,157.7
Sept.	.....	2,575.1	.....	1,977.6
Oct.	.....	2,443.0	.....	1,914.6
Nov.	.....	2,377.3	.....	1,869.3
Dec.	.....	2,057.2	.....	1,455.6
Totals	.....	31,612.2	.....	24,070.0

F. W. Dodge Corp.

Prices Level Off

The rise in wholesale prices has come to at least a temporary halt. Following a steady upswing during late summer and early fall, the all - commodities index dropped from its high of 118.3 (1947-49 = 100) in early September and leveled off at 117.5 during the first two weeks of October. The index for all commodities other than farm and foods has dropped steadily from its high of 125.9 to 125.5 per cent of the base period. The decline of ferrous scrap and tin prices has been a contributing factor in the downtrend.

Appliances Picking Up

The appliance industry is showing new signs of breaking out of its slump. Tappan Stove Co., St. Louis, declares that September was the biggest month in its 77-year history and that sales for the first nine months of 1957 are ahead of last year's. A. B. Ritzenthaler, vice president of sales, reports: "We expect to reach an all-time high in commercial sales in 1957."

Motorola Corp., Chicago, expects to report a nine-month sales record when final tabulations are in, says Robert W. Galvin, president. Earnings during the third and fourth quarters will increase over those of the similar period of 1956, he adds.

Production of television sets and radios is also on the uptrend. One indication is the significant rise in manufacturers' sales of picture and receiving tubes in August. Picture tubes rose from 491,935 units in July to 930,296 in August, while receiving tubes went from 33.1 million units to 43 million, according to the Electronic Industries Association.

EIA also reports record production of transistors in August. Manufacturers turned out 2,709,000 units, compared with 1,703,000 in July.

Employment Declines

Total employment fell by 700,000 between August and September to 65.7 million, report the Departments of Commerce and Labor. The change was seasonal. Even though the dip in factory employment was slightly more than seasonal, nonagricultural employment was at the highest September level on record.

Case histories prove

TM

Triple-Safe

ALLOY CHAIN

increases safety, cuts chain costs!

GAMMA RAY QUALITY CONTROL!

X-Ray type testing of master, joiner and end links assures safe, trouble-free welds.

CONTROLLED ATMOSPHERE HEAT-TREATING

on all popular sizes, provides uniformity throughout the sling assembly.

EXCLUSIVE, PATENTED TAYCO HOOKS!

I-Beam type design plus alloy steel construction mean extra safety, longer life!

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REGISTERED!

Certificate bears the chain's guarantee . . . proof test . . . serial number.

CERTIFICATE OF TEST

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S. G. TAYLOR CHAIN CO., INC.

Plants: Box 509, Hammond, Indiana
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Chain is our specialty, not our sideline!

TAYLOR MADE
A GREAT NAME IN
Chain SINCE 1873

*. . . this 285-ton Pollock Open Hearth Ladle is welded on a special positioner designed specifically for jobs like this. The ladle is placed on the rollers and revolved until the ladle is in the best possible position for "down-welding." Using the positioner results in better welds. A positioner for a 285-ton ladle is big . . . it has to be. But at Pollock, where thinking is as big as the job itself, huge machines are commonplace.

The William B. Pollock Company prides itself on being able to do the big jobs. It has the skilled men, the resourceful engineers and the special machines (as this positioner) that are needed to turn your biggest drawing board dreams for iron and steel making facilities into solid, practical realities. When you're thinking "big," think of The William B. Pollock Company . . . specialists in all matters and equipment pertaining to the manufacture of iron and steel.

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BLAST FURNACES • HOT METAL CARS AND LADLES • CINDER AND SLAG CARS • INGOT MOULD CARS • CHARGING BOX CARS • WELDED OPEN HEARTH LADLES

LESTER M. DANNER
Raymond Mfg. p. a.

CARL E. SUTHERLAND JR.
Skidmore-Wilhelm v. p.

WENDELL F. CARNEY
Taft-Peirce gen. sales mgr.

LAWRENCE G. MAECHTLEN
Square D first v. p.

Lester M. Danner was promoted to purchasing agent, **Raymond Mfg. Co.**, division of Associated Spring Corp., Corry, Pa. He succeeds **Cornelius H. Holden**, retired. Mr. Danner was assistant purchasing agent.

Carl E. Sutherland Jr. was named vice president in charge of production and engineering for **Skidmore-Wilhelm Mfg. Co.**, Cleveland. He was general superintendent.

R. B. Leland was made factory sales manager, **Fageol Products Co.**, Kent, Ohio. He has been with Twin Coach Co., parent firm, since 1929, serving as assistant to the vice president-sales since 1950.

Harry H. Price was made manager, wire rope and construction material products department, Chicago district sales office, **American Steel & Wire Div.**, U. S. Steel Corp. He succeeds **Bruce D. Bennett**, promoted to a new sales executive post in Cleveland.

J. Herbert Smith succeeds **James H. Goss** as president of **Canadian General Electric Co.**, Hamilton, Ont.

William V. Bernsen was made sales manager, **Engine Life Products Corp.**, El Monte, Calif.

John G. Murray, a vice president of **Continental Can Co.**, New York, was named director of technical development to succeed **Maj. Gen. C. L. Adcock**, retired. Mr. Murray was general manager, Crown & Cork Div.

Wendell F. Carney was made general sales manager, **Taft-Peirce Mfg. Co.**, Woonsocket, R. I. He succeeds **Walter E. Rogers**, who requested inactive status because of illness. Mr. Carney was New York sales manager.

Frank G. Hensel was made administrative manager, **Robins Engineers Div.**, Hewitt-Robins Inc., Stamford, Conn. **Jack Van Kleunen** was made manager of engineering sales.

Frank T. Peterson was appointed president, **Black-Clawson Co.**, New York. He succeeds **Clifford R. Crawford** who resigned as president but remains as vice chairman. Mr. Peterson was executive vice president.

Jerome L. McIntyre was named vice president and general manager, **Searle Steel Corp.**, San Diego, Calif.

Robert D. Smith was elected vice president and general manager, **Mystik Adhesive Products Inc.**, Chicago.

Dr. J. R. Gump joined **Michigan Chemical Corp.**, St. Louis, Mich., as group leader of inorganic research.

W. L. Richardson was made assistant to the sales manager, **Cargotainer Div.**, Tri-State Engineering Co., Washington, Pa.

Russell H. Thompson was made assistant sales manager for Minnesota by **Rolled Steel Corp.** He is at Minneapolis.

Lawrence G. Maechtlen was made first vice president, **Square D Co.**, Detroit. As a vice president, he served for the last three years as manager, western division, Los Angeles. He is now at Detroit.

Ed O. Reese was made manager, Youngstown district, **Youngstown Sheet & Tube Co.** He is replaced as general superintendent of flat rolled and tubular products by **John H. Stone**. Mr. Reese succeeds **J. S. Stainier**, retired.

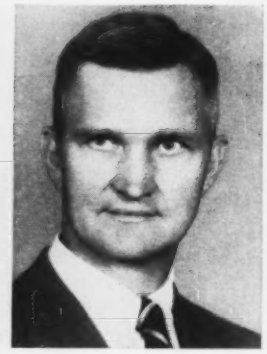
William M. Kerrigan, formerly of the aircraft products division, **Standard Pressed Steel Co.**, Jenkintown, Pa., was appointed manager of Flexloc sales in the locknut department. **Frank R. Lindh** was made assistant manager-Flexloc sales. Mr. Kerrigan succeeds **John J. Wiest**, who fills the new post of technical director of the locknut department, formed to consolidate sales of Flexloc industrial locknuts and special aircraft nut-type fasteners.

George V. Mueller was appointed to the motor design and development staff of **Robbins & Myers Inc.**, Springfield, Ohio. He was professor of electrical engineering at Purdue University.

Joseph Shelton was made general sales manager, Los Angeles division, **Ducommun Metals & Supply Co.**

Brainard Steel Div., Sharon Steel Corp., Warren, Ohio, appointed **Daniel A. Sherick** plant products manager and superintendent, Gris-

GEORGE H. TODD



HARRY B. NICHOLSON

Armco Steel operating posts

MARTIN D. ARCHANGELI

CHESTER D. CHRISTIE

Eaton Mfg. positions

wold plant; **Walter A. Garrett,** plant products manager and sales manager, Larchmont plant.

George H. Todd was named general superintendent, Ashland, Ky., Works, **Armco Steel Corp. Townsell G. Marshall** succeeds Mr. Todd as assistant to the manager. Mr. Todd succeeds **Harry B. Nicholson,** recently promoted to assistant to the vice president-operations, Armco Div.

Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp., appointed **Earnest J. Bolduc** New England district sales manager, Boston; **Charles P. Harlow,** sales manager, hardware products department, assuming duties at the corporation's subsidiary, American Wire Fabric Corp., Mt. Wolf, Pa.

R. E. Hadady was made sales manager for DataTape products, **Consolidated Electrodynamics Corp.,** Pasadena, Calif.

Acme-Hamilton Mfg. Corp. appointed **Henry C. Heine** sales manager of its **Hamilton Rubber Mfg. Corp.** division, Trenton, N. J.

Michael A. Horlak was made new product research and development engineer for **Rotor Tool Co.,** Cleveland.

Robert L. Baddorf was promoted from chief engineer to technical assistant to the president of **Topp Mfg. Co.,** Los Angeles, division of Topp Industries Inc.

Allegheny Ludlum Steel Corp. appointed **James L. McGinnis** district sales manager at St. Louis to succeed **Carl W. Messinger,** retired.

Martin D. Archangeli, assistant general manager, Saginaw, Mich., division, was promoted to the new post of general sales manager, **Eaton Mfg. Co.,** Cleveland. He will be at Detroit. **Chester D. Christie,** assistant chief engineer, axle division, Cleveland, was promoted to sales manager of the division to succeed the late **Hugh D. Mixer. Robert K. Nelson,** sales representative in Detroit, succeeds Mr. Christie as assistant chief engineer in Cleveland. **William M. Kelly,** also sales representative in Detroit, was named district sales manager, in charge of the axle division office. **Cornell Mann** becomes Detroit sales representative.

James E. Swaine Jr. was made sales manager, supplies division, **International Business Machines Corp.,** New York. He is succeeded by **Walter H. Johnson** as administrative assistant in the office of the president.

E. F. Murphy Jr. fills the new post of assistant sales manager in charge of aluminum sales at **Anaconda Sales Co.,** New York.

Terrell J. Small was made southwest district manager for **Morrison Products Inc.** He is at Ft. Worth, Tex.

James K. Heap was named assistant to the manager of Borg-Warner Corp.'s **Ingersoll Kalamazoo Div.,** Kalamazoo, Mich. **Clayton K. Cole** was made chief engineer in charge of industrial material engineering.

Clarence W. Higbee was appointed assistant general manager; **Gillette N. Houck,** sales manager of the new electrical conductor division of **Kaiser Aluminum & Chemical Corp.,** Chicago.

Richard D. Crowley was made assistant director of purchases, **United States Steel Corp.,** Pittsburgh. **William B. McCready** was named purchasing agent for construction materials and services.

Robert T. Schulenberg was named supervisor-machine tool development for **General Electric Co.'s** large steam turbine-generator department, Schenectady, N. Y.

Robert L. Swank was made manager of sales-plastic pipe for **National Tube Div.,** U. S. Steel Corp., Pittsburgh. **Thomas D. Cramer** was made assistant sales manager-plastic pipe. Mr. Swank succeeds **Robert K. Henderson,** now National Tube's Philadelphia district sales manager.

A. E. Reinhard was made general manager in charge of the Portsmouth, Ohio, division, **Detroit Steel Corp. H. E. Baughman,** vice president in charge of the division, retires Dec. 1. **J. F. Van Cleave** was made assistant general manager of the division; **F. C. McGough, V. O. Pentiuk,** and **F. E. Weise Jr.,** assistant general superintendents.

L. E. Grafft was made senior contracting manager, Pittsburgh district office, U. S. Steel Corp.'s **American Bridge Div.** He succeeds **James C. Hamilton,** named assistant to vice president, Los Angeles office. **Philip J. Larson** was made assistant to vice president-contracting, Chicago. He is succeeded as senior contracting

61 models

A machine not put to its best use is theoretically idle. Proper machine selection is an important factor in the profitable use of a multiple spindle automatic. So extensive are the demands on this type of lathe that no single model—or number of models—can be expected to efficiently handle the wide range of work available.

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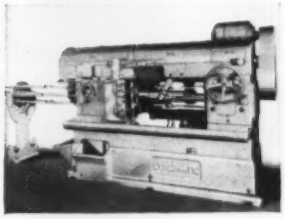

Conomatic

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JOHN VON ROSEN
Chrysler dir.-mfg. eng.

JAMES M. DARBAKER
chief exec. of Copperweld

A. S. CHALFANT
A. M. Byers steel dir.

ROBERT E. SAVAGE
heads Inco's dist. sales

HERBERT C. GOLZ
Elgin Metalformers post

ANTHONY R. PALMER
Republic supt. of bar mills

manager, Chicago office, by **Donald J. Morfee.**

International Nickel Co. Inc. named **Richard B. Kropf** supervisor of development activities in the automotive industry, Detroit, to succeed **E. J. Hergenroether,** retired. **Robert E. Savage** was placed in charge of the distributor sales section, nickel department, New York, succeeding the late **E. J. Bothwell.**

Herbert C. Golz was made general manager, **Elgin Metalformers Corp.,** Elgin, Ill. Former chief engineer, he is succeeded by **Lawrence Fay,** former product design engineer. **Emil Dragisic Jr.** was appointed plant manager. **Ernest Falbe** joins the firm as purchasing agent, the post formerly held by **Robert Golz** who has entered military service. **John J. Sullivan** was made field sales supervisor.

Joseph W. Lewis was made assistant to the president of **Beckman Instruments Inc.,** Pasadena, Calif. He was manager of Arnold O. Beckman Inc.

Anthony R. Palmer was made superintendent of bar mills at the Cleveland steel plant of **Republic Steel Corp.** He succeeds **E. W. Carlson** who transfers to the Buffalo steel plant as assistant district manager.

Robert G. Robey was made sales manager, **F. P. Smith Wire & Iron Works,** Chicago. He was vice president and assistant general manager, Magnesium Co. of America.

Robert F. Hodgson was made manager of sales and engineering, Kalamazoo, Mich., division, **New York Air Brake Co.** He was manager of engineering. **Walter S. Root** was made manager-industrial sales for the division.

Metal Products Div., **Koppers Co. Inc.,** appointed **D. P. Dakos** sales engineer of the western district for aircraft sound control products at Los Angeles. He replaces **D. B. Callaway,** named chief engineer of the industrial sound control department at division headquarters in Baltimore.

John von Rosen was named director of manufacturing engineering for **Chrysler Corp.,** Detroit. He was director of plant engineering.

James M. Darbaker was elected chief executive officer of **Copperweld Steel Co.,** Pittsburgh, to succeed the late **Frank R. S. Kaplan.** Mr. Darbaker continues as president and will serve also as acting chairman.

A. S. Chalfant was appointed director of steel sales at **A. M. Byers Co.,** Pittsburgh. He was executive vice president and sales manager, McDowell Mfg. Co.

Chester S. Jones was made sales manager, **Buhr Machine Tool Co.,** Ann Arbor, Mich. He served for many years with Cross Co.

Robert A. Bailey was made marketing manager of **Norden - Ketay Corp.'s** western division, Los Angeles. He was vice president-sales manager, Engineered Electronics Co.

Frederick R. Koepenick, former plant supervisor of Sciaky Bros. Co.'s western research division, was elected president of **Electronic Welding,** Burbank, Calif.

Raytheon Mfg. Co., Waltham, Mass., elected as vice presidents **David D. Coffin,** manager-missile systems division; and **Dr. Thomas H. Johnson,** manager-research division.

R. K. Turner was appointed president of **Bakelite Co.,** division of Union Carbide Corp., New York. He succeeds **George C. Miller,** now president of Union Carbide Realty Co.

Donald A. Sanders was made Boston district sales manager, **H. M. Harper Co.**

OBITUARIES...

Harold S. Falk, 74, president, **Falk Corp.,** Milwaukee, died Oct. 7.

Harry R. Lehman, 64, vice president-manufacturing, **Cribben & Sexton Co.,** Chicago, died Oct. 3.

William F. Johnson, 62, president, **Johnson Welding Equipment Co.,** Chicago, died Oct. 7.

MACHINING PERFECTION always starts with the right steel

Pick exactly the right steel for any job from J & L's complete cold finished line

"Increased valve cap production 31% with J & L 1113 Bessemer steel"

This valve cap for drums requires considerable surface machining, drilling and tapping. Comparison test with the previously used open hearth leaded steel shows J&L "1113" leaded Bessemer steel upped production 31% . . . permitted change from a 15-second to a 10⅓-second cycle. Surface finish is smoother. J&L leaded steels assure you higher cutting speeds, longer tool life. Get facts from your distributor or write to Jones & Laughlin, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

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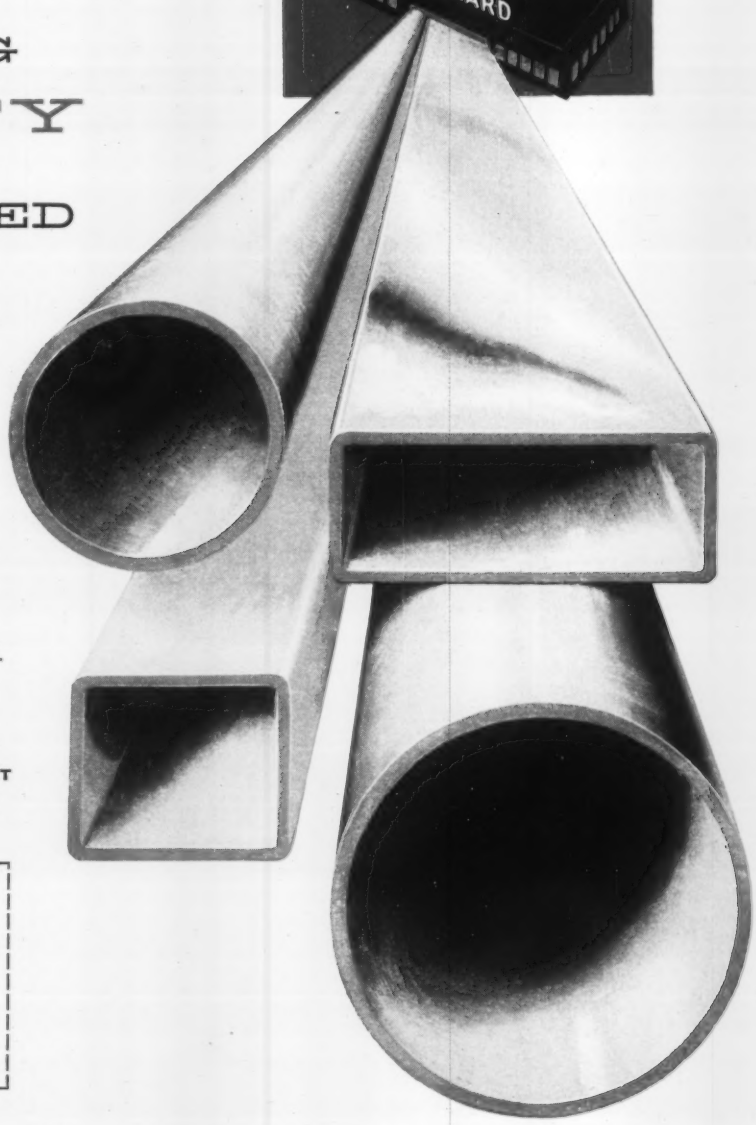
. . . a great name in steel

IN BRAINARD STEEL TUBING QUALITY IS ASSURED



As a division of Sharon Steel, Brainard can be sure the steel used for the fabrication of tubing has been developed to meet their own exacting standards. From mine to finished product, Brainard Welded Steel Tubing has the extra quality that can come only from an integrated industry.

Brainard Electric Welded Steel Tubing, from ½″ to 4″ in diameter, is also available in squares, rectangles and many special shapes. Brainard Tubing can be furnished swedged, pressure tested, or fabricated.

For mechanical welded steel tubing of top value, buy Brainard.

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Brainard Steel Tubing

SHARONSTEEL

400

Brainard Steel Division, Sharon Steel Corporation
Griswold Street, Warren, Ohio

Enters New Field

Parker-Kalon is licensed by Tinnerman to make automated fastener feeding equipment

GENERAL AMERICAN Transportation Corp.'s Parker-Kalon Div., Clifton, N. J., is entering the automation equipment field. It has acquired manufacturing and sales rights to patented, Pneuma-Serve fastener feeding equipment through a license granted by Geo. A. Tinnerman Corp., Cleveland.

Pneuma-Serve is a portable, fastener feeding machine by which any type standard commercial screw (including those with preassembled washers) can be fed continuously from a hopper to any standard electric, or air-driven, power screw driver. It incorporates a selective release mechanism which controls the entry of fasteners into the plastic delivery tube so that oversize or mixed screws can be ejected before they enter the feeder mechanism.

The Tinnerman organization plans to continue its research and development work in the area of automated fastener feeding and will serve as a consultant to Parker-Kalon on all matters concerning Pneuma-Serve.

Plan Industrial Center

International Harvester Co., Chicago, sold its multimillion dollar Richmond (Ind.) plant to a group of civic leaders, effective Nov. 1. The group plans to form an industrial center in the plant to re-establish employment lost through transfer of International Harvester's operations to Chicago and Canton, Ill. Included in the sale were more than 300 machine tools and a foundry.

Research Firm Organized

Youngstown Research & Development Co. has been organized in Youngstown to continue work which was in progress when Cold Metal Products Co. was sold to Jones & Laughlin Steel Corp. J&L did not acquire certain Cold Metal assets, including investment in two small development firms; these assets were bought by former shareholders and will be owned by the new company. A number of patent applications and license agreements are included in the deal.

Adds Magnesium Forgings

Magnesium forgings have been added to the commodity line of wrought mill products made by Harvey Aluminum at its Torrance, Calif., plant. The company's development and production activities with magnesium die and hand forgings will be directed to military and commercial markets.

Superior Tube Expands

Superior Tube Co. is erecting a new office building and mill addition to its general offices and main plant on Germantown Pike, Norristown, Pa. This project will cost about $2 million and is part of a $5 million expansion program which is scheduled for completion in 1958.

Forms Spinning Division

Atmosphere Control Co. Inc., Philadelphia, formed an ACC-Prototype Design & Mfg. Div. to handle individual and production runs of spinnings up to 92 in. in diameter and up to ½ in. thick. Aluminum, brass, bronze, rolled steel, and stainless steel will be handled. Division director is Mrs. Frances M. Corney, vice president of the parent organization.

Newtown Tool Reorganized

Newtown Tool & Die Inc. has been incorporated in Elmira, N. Y., to carry on the business of Newtown Tool & Engineering Co. Officers of the new firm are: President and secretary, R. A. Bennett; vice president and treasurer, John M. Bennett; and assistant secretary, T. G. Loll.

Wagner Buys Product Line

Wagner Mfg. Co., Sidney, Ohio, acquired the household lines of Griswold Mfg. Co., Erie, Pa.: Cast iron cooking utensils, contemporary mailboxes, and stove and furnace pipe dampers. Not included: Griswold commercial electric cooking equipment.

Linde Expands Laboratories

Linde Co., division of Union Carbide Corp., New York, plans to build extensive new facilities for its research laboratories in Tonawanda, N. Y. The project will include a high-pressure laboratory, metallurgical laboratory, a new hydrocarbon storage building, and a new service building.

Bliss Relocates One Unit

E. W. Bliss Co., moved its can machinery manufacturing operations to its plant at 1004 E. State St., Hastings, Mich. Can machines formerly were assembled at a separate plant in Hastings. The Bliss can machinery sales headquarters has been moved from New York to the company's general offices in Canton, Ohio.

Gets $12.5-Million Award

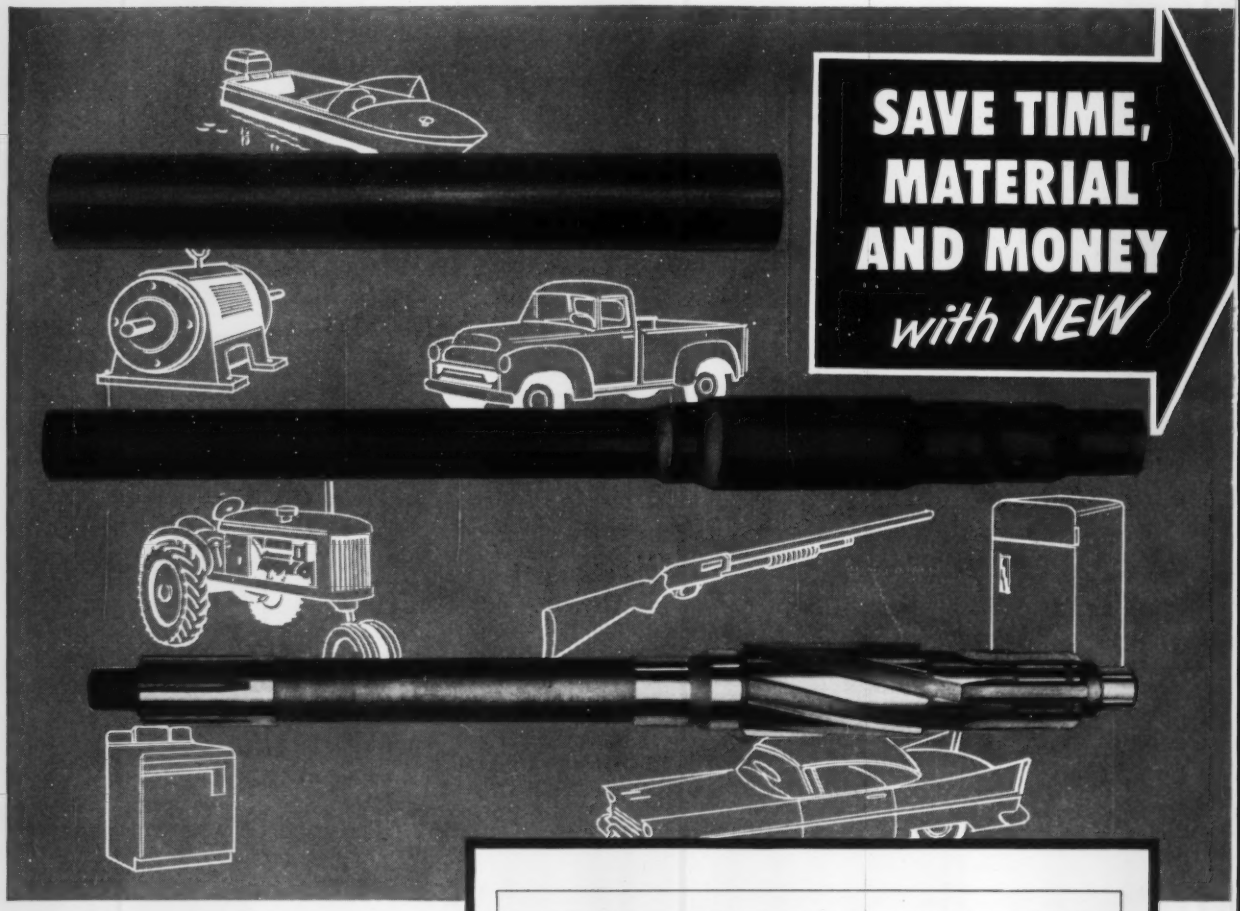
National Shipyards & Steel Corp., Manila, P. I., will make capital additions to its facilities at a cost of $12.5 million. The project includes a structural mill and a mechanized hot and cold sheet mill to be erected at Iligan City, Minanao, P. I. Loewy-Hydropress Div. of Baldwin-Lima-Hamilton Corp., Philadelphia, was awarded a design and supply contract for the mills, including all auxiliary equipment and buildings.

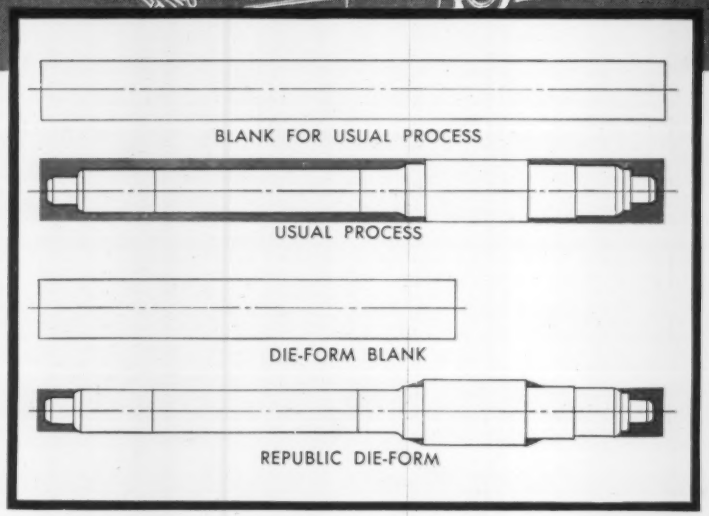
Firms Shift Operations

While interest is centered on plant expansions and development of new products, shifts in the opposite direction are taking place at a much slower rate. AC Spark Plug Div., General Motors Corp., Detroit, has ended the manufacture of bombing navigational computers and gun-bomb-rocket sights after nine years of production at the Milwaukee plant. Emphasis is now on missile components.

Electro Metallurgical Co.'s cobalt plant on Packard Road, Niagara Falls, N. Y., will be closed permanently soon. Harold Reagan, plant manager, says the plant has "outlived its usefulness." The facility was built in 1941 as a temporary emergency measure shortly after the German advance in Eu-

(Please turn to Page 68)





YOU CAN SAVE UP TO 1 OUT OF 3 TONS OF STEEL

when you specify Republic Die-Form for high-volume production of multi-diameter machine shafts. Drawings and photographs show dramatic savings actually made possible in an automotive transmission shaft. In this case, 200 tons of cold formed blanks produced parts formerly requiring 300 tons. Machining time was reduced accordingly.

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World's Widest Range of Standard Steels

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What It Is. The Republic Die-Form process is a new method of cold forming hot rolled carbon, alloy, or stainless steel bars into multi-diameter bars ready for final finishing.

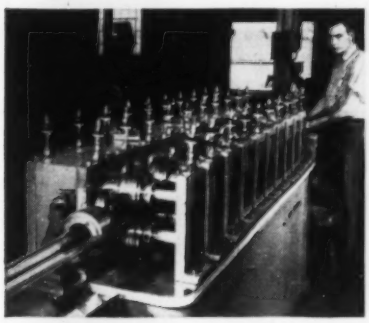
What It Does. Use of Republic Die-Form instead of conventional bar stock permits major savings in time, steel, and money in mass produced, multi-diameter machine shafts. Since Die-Form closely approximates the final part, only finishing cuts and/or grinding are required for completion. Scrap loss is minimized—production rate increased.

Savings in time and steel mean dollar savings. However, costs may be further reduced through decreased capital investment in machine tools, and elimination of excess weight-handling costs in raw material and scrap disposal.

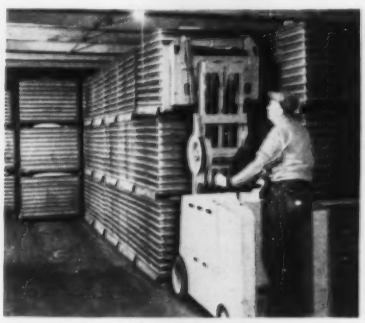
Finally, Republic Die-Form processing increases tensile strength and machinability of any given hot rolled steel analysis used. These characteristics assure an outstanding surface on completed parts, provide further reductions in machining time and permit the possibility of heat treatment elimination.

Capacity and Limitations. Republic Die-Form is available up to two inches in diameter. It is limited to symmetrical cross sections of two or more diameters. "Hourglass" sections cannot be produced. Die-Form is economical only in large production runs.

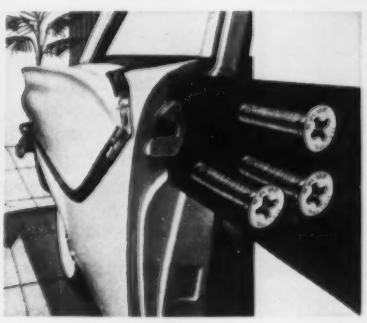
Plan now to check the savings potential of Republic Die-Form in your machined shaft production. Contact your Republic office for full details. Or write for illustrated literature, ADV-746.



SAVE PAINT PREPARATION COSTS on your formed steel products by specifying Republic Electro Paintlok®. Special paint-holding surface is applied at our mills. It won't crack, flake or peel, even under severe bending, as demonstrated by this acoustical fastener forming operation. Final finish can be applied immediately, with excellent results. Mail coupon for data.



TIME, LABOR, AND SPACE SAVINGS were all realized through use of Republic Roll-Over Boxes for this bulk chemical handling operation. Former laborious methods involving bagged material were eliminated. Now one man with revolving-fork truck does the job faster, more efficiently. Check advantages of Republic's complete materials handling line. Send coupon.



LIFESAVING DOOR LATCH striker plate is permanently anchored to door post with Republic Nylok® Bolts. Nylon pellet in body of bolt forces strong metal-to-metal lock between opposite mating threads. Resiliency of pellet provides excellent adjustability and re-use characteristics—and provides liquid seal when bolts are seated. Send coupon for facts.

STEEL

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(Advertisement)

How "Tools" Shortened the Work Week

To work less and have more is a natural human desire. The chart above shows how well Americans have fulfilled this desire since the turn of the century. Today, people produce more than twice as much per working hour as their fathers or grandfathers did in 1900. As a result, they have 20 more leisure hours per week plus 50% more goods and services to use and enjoy.

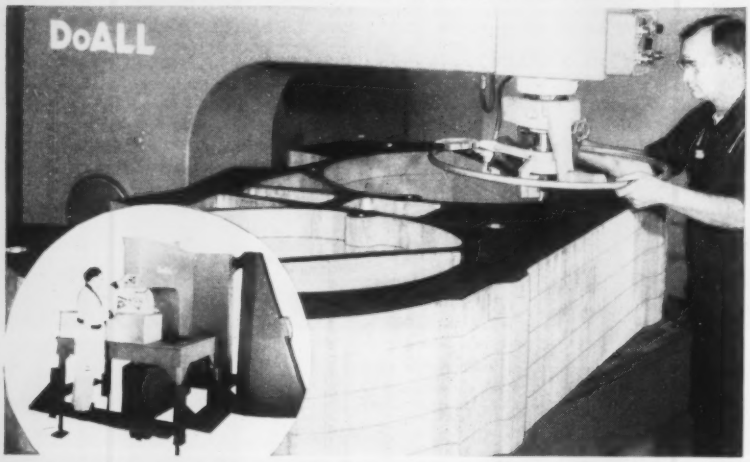
This picture of greater productivity with greatly improved living standards and more leisure was achieved by one thing only—new and better "tools".

Take one example. The revolutionary new machine tool shown below is producing structural members for jet aircraft. With it, the operator shapes out these parts ten times as fast as with the machine previously used. The entire sawing head "floats" on its own flexible crane. The workpiece is held stationary while the operator guides the continuous-cutting high speed steel saw band along the layout line. This new idea makes it possible to apply the economies of band machining to hundreds of heavy jobs previously handled at high cost on slower, less versatile machines.

SAVINGS INVESTED IN THESE "TOOLS"		PRODUCTION OF GOODS AND SERVICES	AVERAGE WEEKLY HOURS OF EMPLOYMENT
1900	$7 BILLION	OUTPUT PER HOUR .56c WORTH	60 HOURS
1920	$15½ BILLION	OUTPUT PER HOUR .70c WORTH	54 HOURS
1930	$18⅓ BILLION	OUTPUT PER HOUR .80c WORTH	47 HOURS
1950	$33 BILLION	OUTPUT PER HOUR $1.21 WORTH	40 HOURS
1970	$65? BILLION	OUTPUT PER HOUR $1.90 WORTH	37? HOURS

When the latest tools like this one are used widely to make other improved "tools", the U.S. can turn out more goods and services per manhour . . . and that's the only way America can provide an even shorter week together with better living for everyone in a growing population.

Five jet aircraft parts being produced simultaneously on a new band machine which "floats" on its own flexible crane to reach any position within a 70 sq. ft. working area. It slices through any solid substance at fantastic rates!



Reprints of this series on economics plus "economic kits" available for employee education.

IN ADDITION TO the new machine illustrated, DoALL offers industry more than 1500 other cost-reducing machine tools, cutting tools, gaging and supply items. Ask for booklet "How DoALL Products are Made, Sold and Serviced".

The DoALL Company
Des Plaines, Illinois
38 Local Sales-Service Stores E-102N

(*Concluded from Page* 65)

rope had cut this country's sources of refined cobalt.

The Milwaukee Div. plant of Cottrell Co., Westerly, R. I., printing press manufacturer, will close Jan. 1. "The small size of this plant made production costs just too high for economical operation under present conditions," says C. J. Conlin, division manager.

Harris Hub Co. Inc., Scranton, Pa., will halt production permanently at its Scranton, Pa., plant. Production of metal cabinets will be concentrated at the firm's main plant in Harvey, Ill.

Renames Instrument Div.

Robertshaw-Fulton Controls Co., Richmond, Va., maker of automatic control devices, changed the name of its Fielden Instrument Div., Philadelphia, to the Instrument Div.

To Exploit New Processes

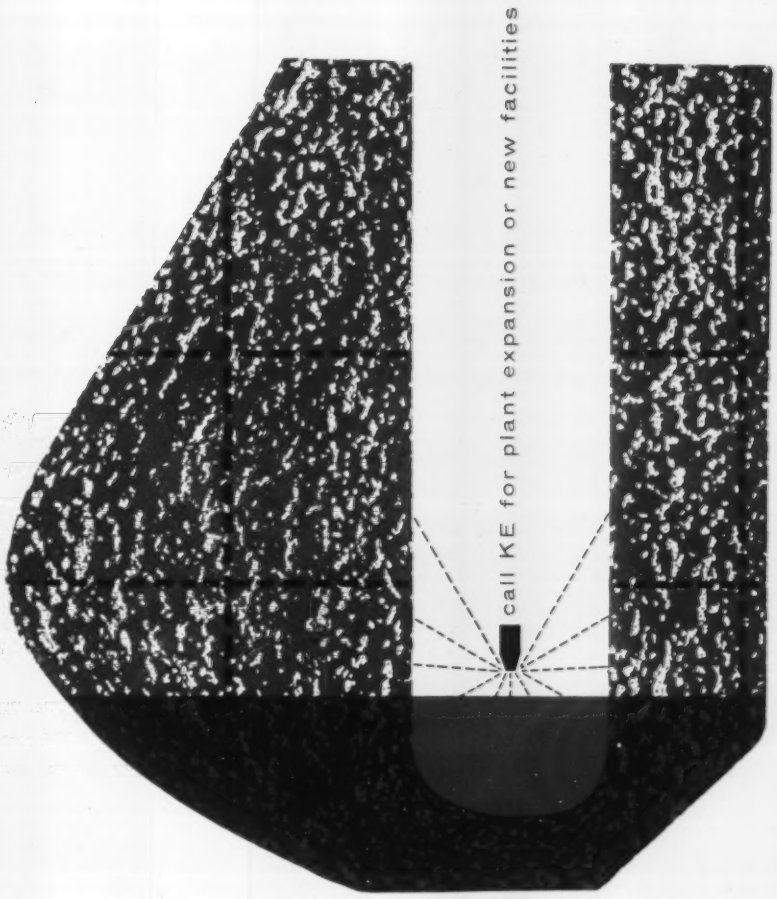
Koppers Co. Inc., Pittsburgh, and Strategic Materials Corp. have entered into a working agreement for the application and exploitation by Koppers Engineering & Construction Div. of metallurgical processes being developed by Strategic Materials at its research laboratories and pilot plants at Niagara Falls (N. Y. and Ont.).

Organizes Consultant Firm

Robert W. Wolcott, recently retired chairman of Lukens Steel Co., organized a management consultant firm. Robert W. Wolcott & Associates will provide counseling services in financing, marketing, administration, office procedures, and management at its offices in the Suburban Station Bldg., Philadelphia.

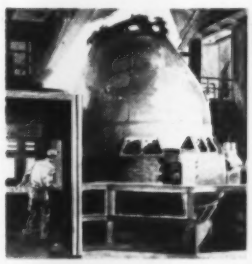
Caloric Enlarges Division

Caloric Appliance Corp., Philadelphia, is expanding its Architectural Porcelain Div. Its Topton, Pa., plant is producing complete panels consisting of a porcelainized metal exterior, a core of insulating material, and an interior surface ready for attachment to the framing. Porcelain-enamel panels for curtain wall construction



INGENUITY

has made KE the experienced leader in L-D Process Steel



L-D process plant similar to that now being installed by KE at a major eastern steel plant.

Design and construction of over 2,000,000 tons of oxygen steel making capacity. Intimate familiarity with oxygen steel technology in all parts of the world. A pioneer's experience in applying tested techniques of steel making. U.S. licensor for the proven L-D process—also P.T. Oxygen Guns for present and planned open hearths.

These are reasons why Kaiser Engineers is uniquely qualified to develop your oxygen steel program. Another reason is traditional KE ingenuity—engineering and construction ingenuity which means your steel facilities will be completed more quickly, at lower cost, and operate more efficiently.

Economic analysis, plant location, engineering, design, procurement, expediting, construction—KE does one or all. With your first thought of new steel producing facilities—call KE.

KAISER ENGINEERS engineers—contractors

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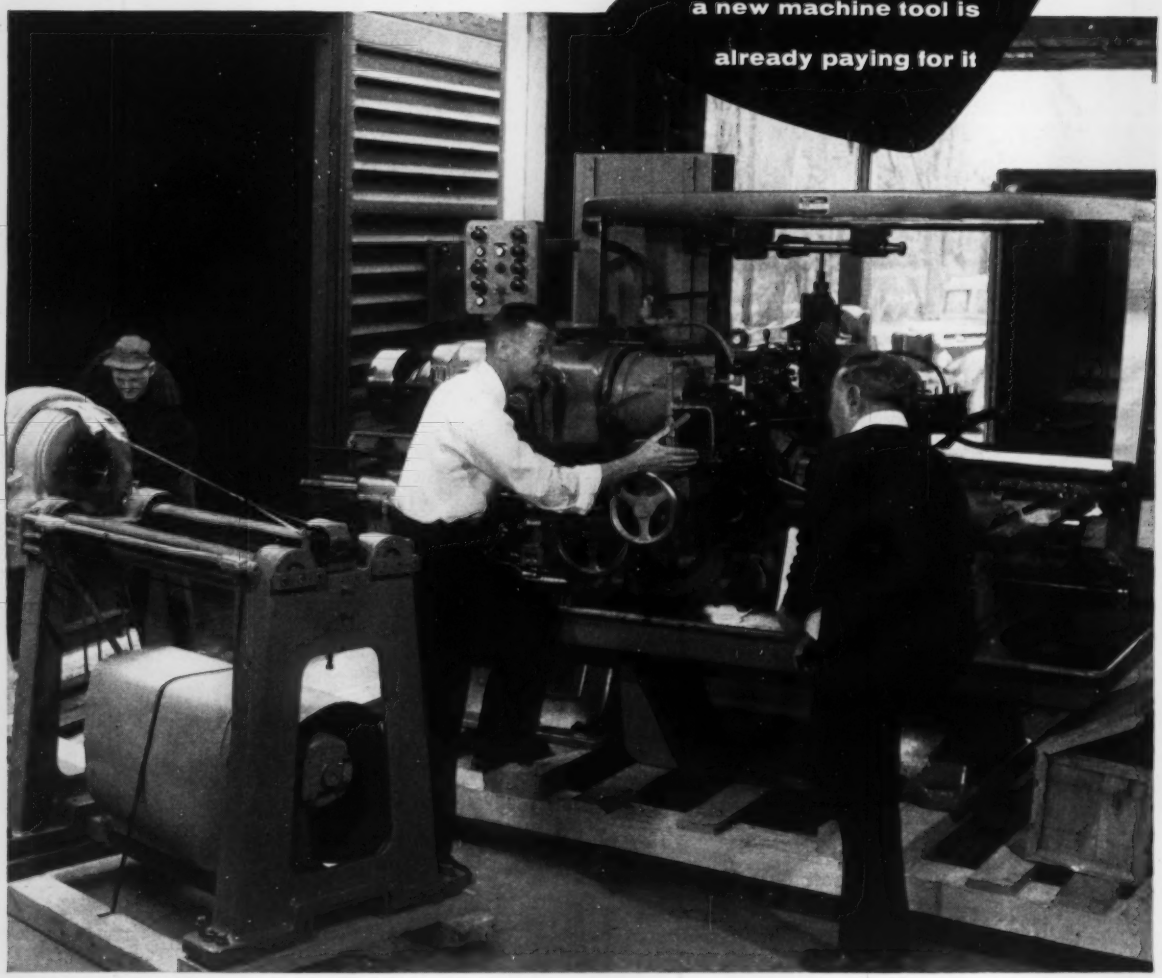
JONES & LAMSON MACHINE COMPANY

the man who needs a new machine tool is already paying for it



Blessed Event, Plant-Style

They're passing out cigars in the front office. And here on the delivery platform, the production V.P. is on hand personally to welcome the new arrival . . . a J & L Turret Lathe.

Beaming grins like his can be seen throughout the plant, and with good reason: everyone figures to benefit from this new equipment. The operator's job is made easier, and his opportunities for increased compensation are better. Production management can start right away on those new production estimates, and begin planning further improvements. Top management knows that the competitive position of the company is stronger. And right down the line, that profit-sharing plan looks sweeter than ever.

Is *your* company benefiting from the increased production and added versatility offered by advanced J & L equipment?

If not, *why* not? We offer a variety of liberal finance plans, and we'd like to give you all the details. Write today. JONES & LAMSON MACHINE COMPANY, 517 Clinton Street, Springfield, Vermont.

Turret Lathes • Fay Automatic Lathes • Precision Boring Machines • Thread & Form Grinders • Optical Comparators • Threading Dies, Taps & Chasers

are available in an almost unlimited range of colors.

To Make Honeycomb Core

Solar Aircraft Co., San Diego, Calif., has licensed Swedlow Plastics Co., Los Angeles, to manufacture its resistance-welded stainless steel honeycomb core in the U. S. and Canada.

Metals & Alloys Formed

Metals & Alloys Corp. has been organized to specialize in marketing metals and alloys in the jet aircraft and nuclear energy fields, and in the development and sale of extruded steel shapes. Officers are: President, J. L. Sussman; vice president and secretary, Alvin Schulman; and treasurer, Bernard Martin. Offices are located at 339 Fifth Ave., New York, N. Y.

NEW PLANTS

Crucible Steel Co. of America, Pittsburgh, opened a specialty steel warehouse and sales office at Waltham, Mass. Burton Reese is the Boston district sales manager.

Westinghouse Electric Corp., Pittsburgh, will construct a 60,000 sq-ft plant at Glassport, Pa., for its Manufacturing & Repair Div. W. T. Pitzer, central regional manager of the division, says the building should be completed during the last quarter of 1958. R. L. Bogardus will be manager of the new plant.

A factory structure with a stressed skin aluminum dome, developed by Kaiser Aluminum & Chemical Corp., Oakland, Calif., will be erected in Abilene, Kans., for the **Fi Fo Conveyor Co.,** a division of Vacu-Blast Co. Inc., Belmont, Calif. The plant will be used to manufacture pneumatic granular conveying systems.

Dake Corp., Grand Haven, Mich., formally opened its plant at 724 Robbins Rd., Grand Haven Township, Mich. The increased space provided by the $500,000 structure is being used to expand produc-

(*Please turn to Page* 74)

Half section of trunnion bearing for a lift bridge. Cast of NBD 4-K metal. Each half weighs 869 lbs., finish-machined.

CALL IN **NBD**
FOR BIG **BRONZE**

Need "big bronze" like this, with oil holes and grooves cast right in? We cast and machine them to tolerances precisely held to your specifications. That's one advantage you gain through NBD's unsurpassed knowledge of casting techniques and machining facilities.

On smaller sizes or production runs, too, you can depend on top quality from NBD. Our specialty is bronze metallurgy . . . we've developed more than 40 special alloys. And we're completely equipped for shell-mold, cast-to-size, centrifugal casting . . . as well as sand casting.

For bearings, bushings, gear blanks, pump parts, call or write us for quotes or information.

AMERICAN Brake Shoe COMPANY

NATIONAL BEARING DIVISION
717 Grant Building • Pittsburgh 19, Pennsylvania
PLANTS IN: CHICAGO • ST. LOUIS • MEADVILLE, PA.

BLACKHAWK ACE FAILS TO FLAKE TI-CO®

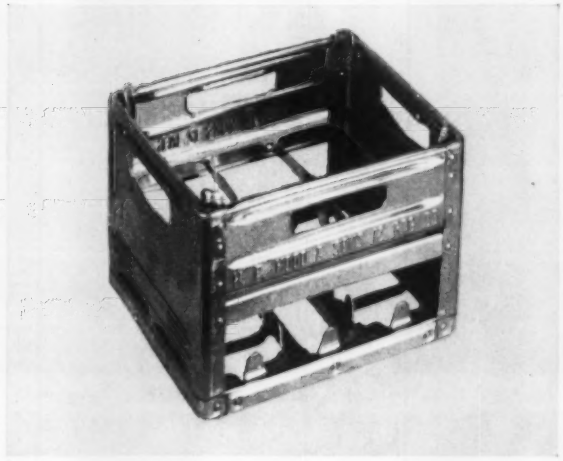
Captain Gus Mortson of the Chicago Blackhawks examines sheet of TI-CO after driving frozen puck into it. Plenty of dents but no evidence of flaking.

Gus Mortson, Captain of the famous Chicago Blackhawks, used his hardest driving shot in slamming a frozen puck into a sheet of Inland TI-CO galvanized steel. Time after time, at speeds up to 100 m.p.h., the puck banged into the sheet but the zinc coating on TI-CO stayed put . . . not a sign of flaking. This brutal test illustrates how TI-CO can take it—even when subjected to far rougher treatment than encountered in normal use. Further proof that TI-CO can withstand even the most severe fabricating operations or the toughest handling and still retain its protective zinc coating. No chance for rust to get a foothold.

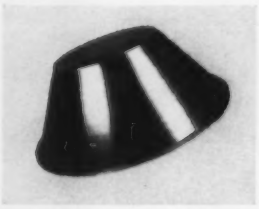
If Corrosion is a factor, consider TI-CO galvanized sheets when designing or redesigning

Before the development of the Sendzimir continuous galvanizing process, it was impractical to use galvanized sheets for many products that required severe fabricating. The zinc coating applied by the old pot-dipped method flaked excessively making costly redipping necessary.

Today, any product that can be made with cold rolled steel can be made with TI-CO. Whether it requires deep drawing, stamping, bending, crimping, lock-seaming or even spin-drawing, TI-CO takes them all in stride. The zinc coating stays put providing over-all protection against corrosion.



Milk cases must take heavy daily abuse and corrosive action of frequent contact with water during the milk cooling process. The manufacturer of this case, looking for a less expensive material than he was presently using, and one that would be stronger and still retain desired corrosion resistance, decided to try Inland TI-CO Galvanized Sheets. He was surprised and pleased to find that TI-CO performed beautifully, even when making the corner locking ears of the cases . . . a part requiring a concentrated, severe draw. In their early tests, the company subjected corner locking ears made of TI-CO to 200 hours in the salt spray cabinet. TI-CO stood the test perfectly, not a sign of corrosion.



For years the manufacturer of this hog waterer made the tank with straight sides, soldered at the joints. They needed the corrosion resistance of galvanized sheets but available pot-dipped sheets could not take the required draw of a one-piece design without excessive flaking of the zinc coating. Then they learned about Inland TI-CO. Today, they spin-draw the tanks and covers for their waterers from TI-CO. Their production costs have dropped 40% (a reduction in soldering of 30% alone). They have a product greatly improved in appearance and durability too.

TI-CO Galvanized Sheets are readily available!

The terrific demand for this high quality sheet has kept TI-CO in short supply since its development. Now, additional production facilities have been completed making greater quantities available.

TI-CO is available in cut sheets or coils, in gages 8 to 30 inclusive and widths as great as 60 inches. TI-CO comes with dry, oiled or chemically treated surfaces. Consult your Inland representative for your needs.

If you are presently manufacturing or designing a product in which corrosion is a factor, it will pay you to investigate TI-CO galvanized sheets.

Write today for a free informative booklet on TI-CO to:

INLAND STEEL COMPANY

38 South Dearborn Street • Chicago 3, Illinois
Sales Offices: Chicago • Milwaukee • St. Paul • Davenport
St. Louis • Kansas City • Indianapolis • Detroit • New York

INLAND TI-CO®

look for this brand—
your assurance of
non-flaking performance

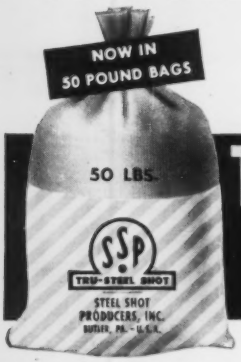
TOOL STEEL BY THE BAG?

Yes sir, 525 million pieces of round, solid, tough machine tool steel in one 50 pound bag of TRU-STEEL SHOT (S-70 size)!

TRU-STEEL is the original high carbon, fully heat-treated steel shot of **tool steel quality!**

If your cleaning operation has "machine tool" requirements — if you're doing peening, descaling of sheet or plate, or continuous cleaning of castings or other materials where you need a steel shot that is round, solid, and tough, uniformly from one shipment to the next, you'll want TRU-STEEL.

TRU-STEEL is TRUE STEEL



Write for full information on what TRU-STEEL can do for YOU in YOUR cleaning operation!

TRU-STEEL SHOT

STEEL SHOT PRODUCERS, INC. ®
Butler, Pa.
Subsidiary of Pittsburgh Crushed Steel Co.
Pittsburgh 1, Pa.

Sold by Pangborn Corporation, and by leading distributors of foundry supplies from coast to coast

(*Concluded from Page* 71)

tion of Dake hydraulic, utility, and arbor presses; and custom-engineered presses.

Brush Beryllium Co., Cleveland, completed construction of its new Elmore, Ohio, plant for production of beryllium metal. The plant and office building are located adjacent to Brush's beryllium alloy plant. The new $4.5-million facility is designed to produce 20,000 lb per month of beryllium in hydroxide form and 10,000 lb per month of vacuum cast beryllium metal.

NEW OFFICES

All southern district sales offices and some other offices of **Republic Steel Corp.** at Birmingham will be consolidated in a new building to be erected in suburban Mountain Brook's Office Park. Offices to be housed there include: Credit department, public relations department and agricultural extension; southern district general sales department, Bolt & Chain Div., and Truscon Steel Div.

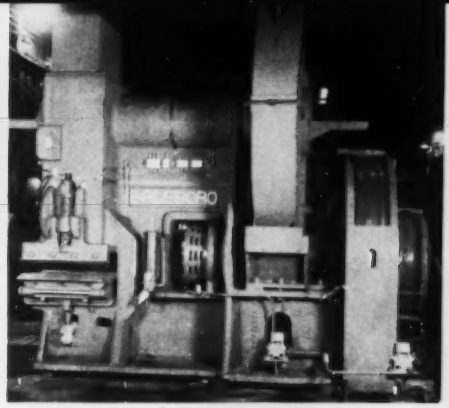
Aluminium Ltd., Montreal, Que., opened a sales office in Atlanta. Curtis H. Gager Jr., southeastern states sales representative of Aluminium Ltd. Sales Inc. (U. S. subsidiary of Aluminium Ltd.) will make Atlanta his headquarters. The Canadian firm sells about 40 per cent of its primary metal in the U. S.

ASSOCIATIONS

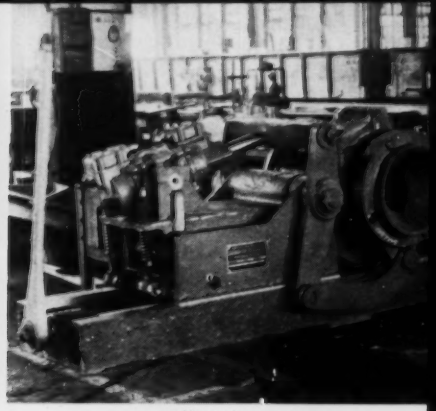
Marshall F. Allen was appointed executive vice president of the **Air Moving & Conditioning Association Inc.**, Detroit.

J. Scott Parrish Jr., Richmond Foundry & Mfg. Co. Inc., Richmond, Va., was re-elected president of the **Gray Iron Founders' Society**, Cleveland. Also re-elected were: A. M. Nutter, E. L. LeBaron Foundry Co., Brockton, Mass., vice president; and A. H. Renfrow, Renfrow Foundry, Los Angeles, secretary. C. R. Garland, W. O. Larson Foundry Co., Grafton, Ohio,

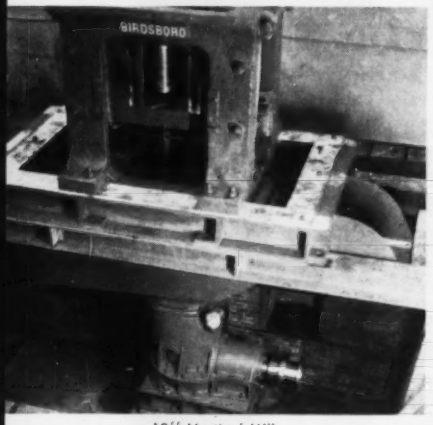
20″—18″—14″—12″—10″ Combination Mill



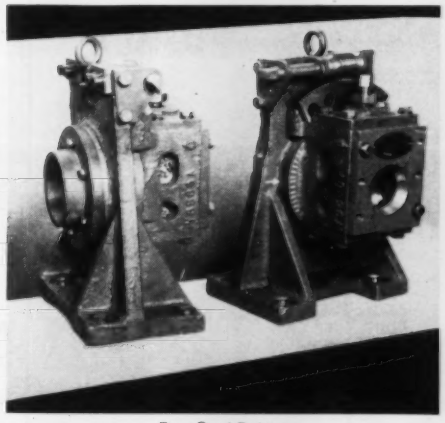
300-Ton Cold Shear



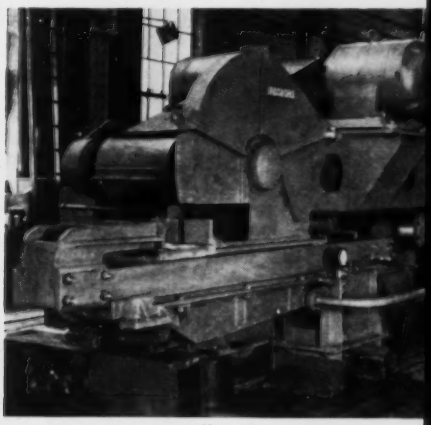
18″ Mill Bar Turner



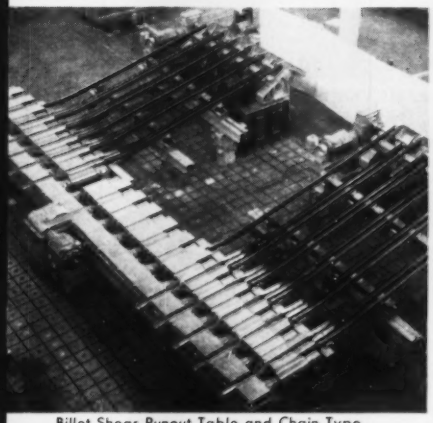
10″ Vertical Mill



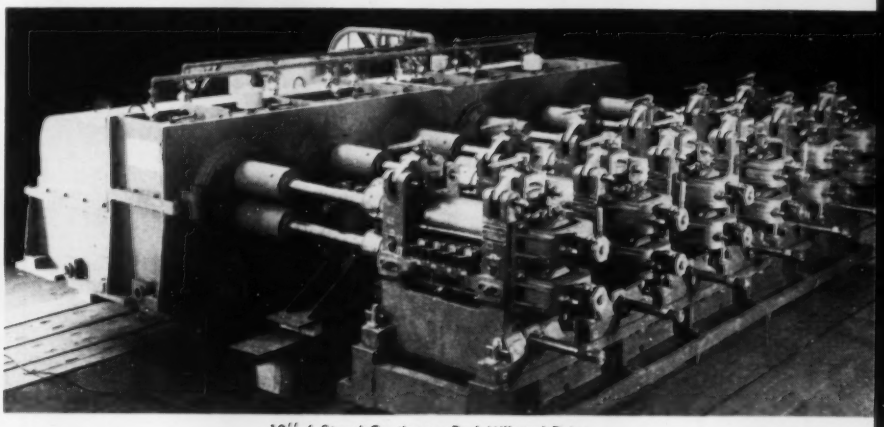
Two Oval Twisters



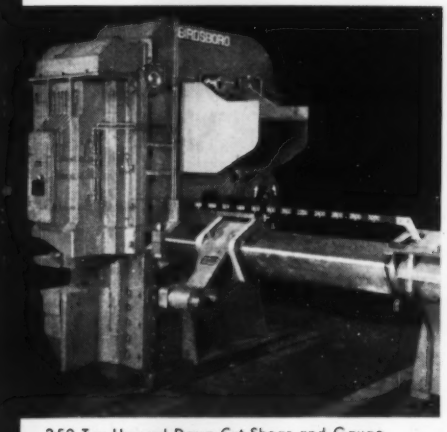
54″ Hot Saw



Billet Shear Runout Table and Chain Type Billet Transfer Beds



10″ 6-Stand Continuous Rod Mill and Drive



350-Ton Up and Down Cut Shear and Gauge

In a customized unit or a complete mill—
skill, imagination, precision mark every job by

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STEEL FOUNDRY AND MACHINE CO.

Main office and plant: Birdsboro, Pa., District office: Pittsburgh, Pa.
Subsidiary: Engineering Supervision Co., 120 W. 42nd St., New York 36, N. Y.

STEEL MILL MACHINERY • HYDRAULIC PRESSES (Metalworking and Extrusion) • CRUSHING MACHINERY • SPECIAL MACHINERY • STEEL CASTINGS • Weldments "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel

Yes, that's a strong promise. But it's being done right now in plants like yours. Here's how:

Match the requirement of your job with a custom-built Reading crane at no extra cost

Imagine, at what you'd normally pay for an "ordinary" crane, you can actually have one "tailor-made" for your own plant. For when you order a READING CRANE, our engineers offer you a choice of several interchangeable motor, trolley and hoisting units.

Known as UNIT CRANE DESIGN, this unique construction method assures greater operating efficiency. It enables you to move more materials at the lowest possible cost. And it helps you reduce maintenance time and save maintenance dollars—any unit can be removed for overhauling or repair without dismantling any other unit!

READING CRANE & HOIST CORPORATION 2116 Adams St., Reading, Pa.

READING CRANES

CHAIN HOISTS | OVERHEAD TRAVELING CRANES | ELECTRIC HOISTS

was named treasurer. D. H. Workman was reappointed executive vice president.

Kenneth S. Watson, General Electric Co., Schenectady, N. Y., was elected president of the **Federation of Sewage & Industrial Wastes Associations**, Washington.

CONSOLIDATIONS

American Bosch Arma Corp., Hempstead, N. Y., purchased **Hydramotive Inc.**, Cleveland, developer of a hydraulic starter for diesel and gasoline engines.

Standard Pressed Steel Co., Jenkintown, Pa., maker of industrial and aircraft fasteners and steel shop equipment, purchased Nutt-Shel Co., Glendale, Calif., producer of special lightweight locknuts used in missiles, electronic apparatus, aircraft, fuel tanks, and related products.

J. S. Thorn Co., Philadelphia, maker of aluminum products, and **Fenestra Inc.**, Detroit, producer of steel windows, building panels, metal doors, roof decks, and automotive products, will merge, subject to approval by stockholders.

NEW ADDRESSES

Carpenter Steel Co., Reading, Pa., moved its district warehouse to enlarged quarters at 4501 James Place, Melrose Park, Ill.

American Die Casting Machinery Co. moved to 1744-56 W. Winona Ave., Chicago, where it will have more than five times its former manufacturing space. The firm's line has been expanded to include larger machines for production of zinc, tin, lead, brass, aluminum, and magnesium diecastings.

An engineering center housing the Engineering & Construction Dept. of **Electro Metallurgical Co.**, division of Union Carbide Corp., New York, has been formally opened at 430 Buffalo Ave., Niagara Falls, N. Y. O. H. Davol is in charge.

cool metal for hot planes

For jet and rocket aircraft engines, wings and surfaces that are subject to extreme conditions of heat, friction and corrosion, where the metal *must stand up* . . . design it, improve it and protect it with McLOUTH STAINLESS STEEL.

specify

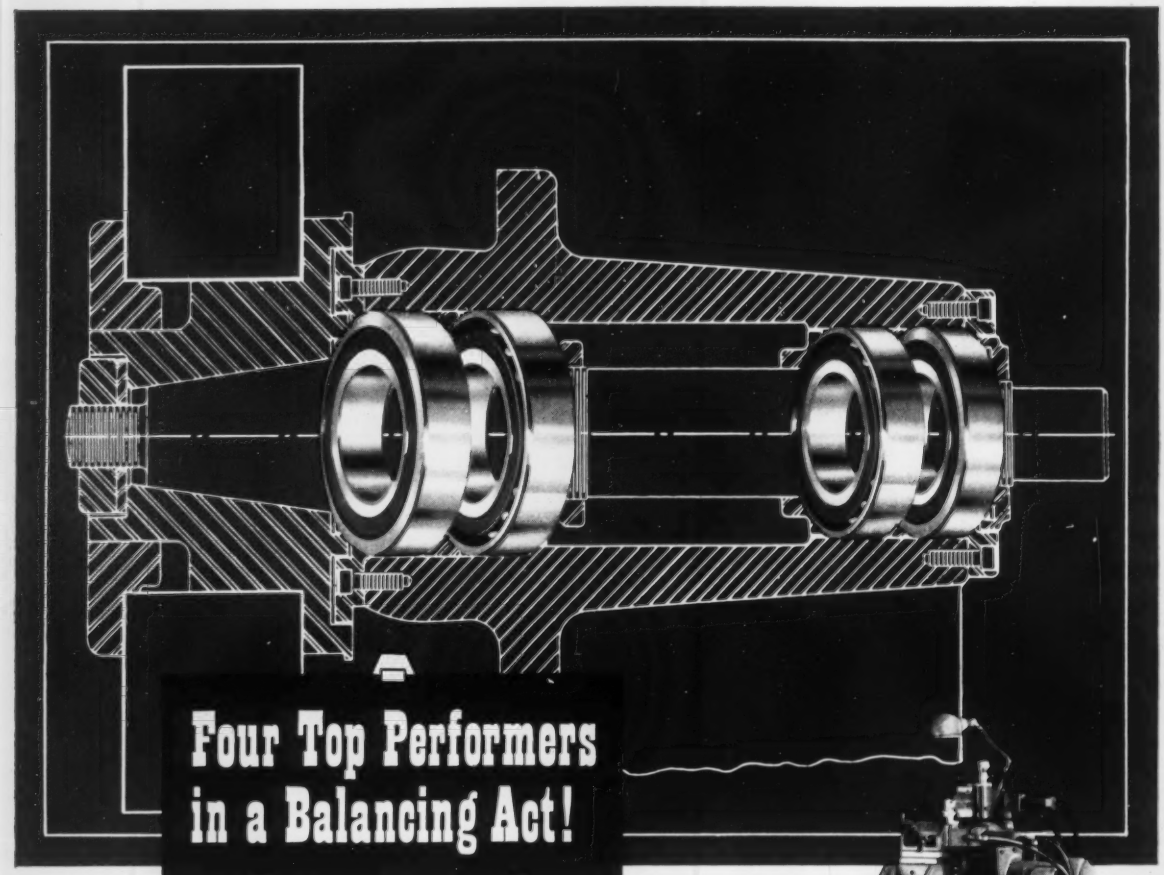
McLOUTH STAINLESS STEEL

HIGH QUALITY SHEET AND STRIP

for aircraft

McLOUTH STEEL CORPORATION DETROIT, MICHIGAN

MANUFACTURERS OF STAINLESS AND CARBON STEELS



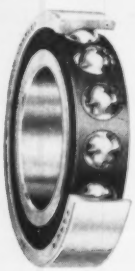
Four Top Performers in a Balancing Act!

To assure true spindle balance, close running accuracy, and vibrationless performance, Royal Master mounts the massive, heat-treated alloy work wheel spindle of its TG-12 centerless grinder on four Fafnir Super Precision Ball Bearings. The spindle assembly itself is mounted directly into the normalized, stress-relieved, close-grained grey iron head stock.

Besides providing proper balance and smooth spindle operation, the Fafnir Preloaded Super Precision Ball Bearings used in the TG-12 eliminate spindle warm-up time—an important feature where the machine is used intermittently. Moreover, relubrication of the bearings is never required. They are lubricated for life when the machine is assembled.

This Royal Master bearing application is a typical example of the Fafnir "attitude and aptitude"—a way of looking at bearing requirements from the designer's point of view and coming up with the right bearing to fit the need. Perhaps the Fafnir approach can be of help to you in finding more economical and satisfactory answers to bearing problems. Write The Fafnir Bearing Company, New Britain, Connecticut.

Royal Master TG-12 Centerless Grinder, Fafnir equipped, is designed for thru-feed, plunge feed, and infeed grinding. It has successfully ground materials ranging from plastics to tungsten carbide. Features include accessibility of both sides of wheel from operating position, for high output and fast checking.



◀ Fafnir preloaded, angular-contact, super-precision ball bearings with composition or bronze retainers are made to highest industry-approved tolerances. Single or duplex bearings like this are used widely on spindle applications.

FAFNIR
BALL BEARINGS
MOST COMPLETE LINE IN AMERICA

Technical Outlook

DOUBLE NICKEL COATINGS— They may be a clue to increasing the protective value of bright nickel-chromium electroplates, B. B. Knapp, International Nickel Co., reported at a meeting of the Electrochemical Society in Buffalo. Mr. Knapp's conclusion was based on results of performance tests conducted by the American Society for Testing Materials. They showed that a coating of two layers of nickel (0.0005 in. plate, buffed, followed by 0.0005 in., for example) was superior to a single layer of equivalent thickness. The double nickel coating also had better corrosion resistance than a copper-nickel composite coating.

ADDED EVIDENCE— Commenting on Mr. Knapp's paper, Dr. Myron B. Diggin, vice president, Hanson-Van Winkle-Munning Co., Matawan, N. J., reported that tests have shown duplex nickel coatings give better corrosion resistance than straight bright nickel plate. They use around 80 to 90 per cent of a semibright nickel, followed by a top coat of the bright type. According to Mr. Diggin, it's possible to change the character of the deposit by changing plating conditions, such as agitation, for example.

MORE ELECTROCHEMICAL NOTES— F. A. Lowenheim, Metal & Thermit Corp., Rahway, N. J., reported that corrosion resistance of tin-nickel alloy plate is superior to nickel-chromium deposits in industrial atmospheres . . . S. J. Marana, Beryllium Corp., Reading, Pa., described an improved, continuous electrolytic process for making high purity beryllium metal. A low temperature fused salt bath consisting of beryllium chloride and sodium chloride is used . . . Tests reported from Western Reserve University showed that sound waves applied during chromium plating improve hardness and adhesion, decrease porosity of the plate. But differences were of low magnitude, compared with chromium plated under standard conditions.

TEST FOR MACH METALS— Westinghouse has developed a facility for testing structural parts in simulated flights through the heat barrier. Several companies have placed orders for the test unit. They'll use it to study the effects of high temperatures on structural parts of aircraft and missiles.

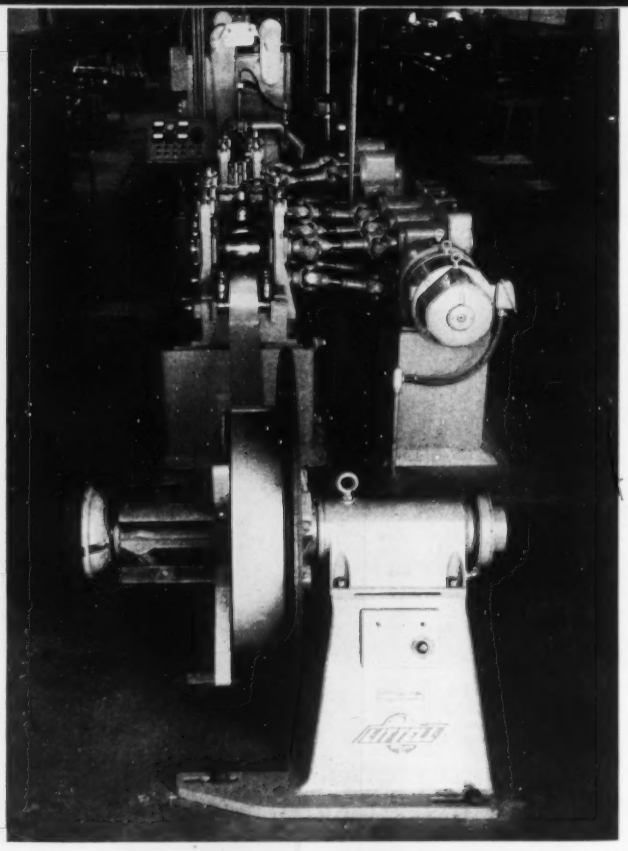
VACUUM INDUCTION FURNACE— Kolcast Industries Inc., is installing one with a capacity of 350 lb at its Minerva, Ohio, works to produce investment castings in sizes up to 45 in.

ZINC RECOVERY— A blast furnace process for smelting zinc is operating in England. Imperial Smelting Corp. Ltd., Avonmouth, has two furnaces producing a total of 70 tons a day. The charge consists of sinter roasted concentrates and coke. Zinc is recovered from furnace gases by passing them through a shower of molten lead.

CLOSER CONTROL— Allegheny Ludlum's Forging & Castings Div. plant, Ferndale, Mich., has installed a Baird direct reading spectrometer which analyzes a heat for ten elements in 80 seconds. Eight minutes after the sample is spooned, the analysis is reported to the melt department. So it gets the information before a heat is tapped.

SELF-LINING FURNACE— Russian experience with thin-walled Czechoslovakian blast furnaces in which the stack lining wore away and was supplanted by refractory material from the burden has been amplified by British research. W. A. Archibald, head of the refractories and slags section of the British Iron & Steel Research Association, proposes a water cooled furnace stack, equipped with ring-like internal shelves at regular intervals, and high level tuyeres. According to BISRA research, it will provide its own refractory protection from the burden.

Accelerated production will make more available for atomic and civilian applications. Tubing, important to fabricators, is being welded by shielded arc from continuous strip



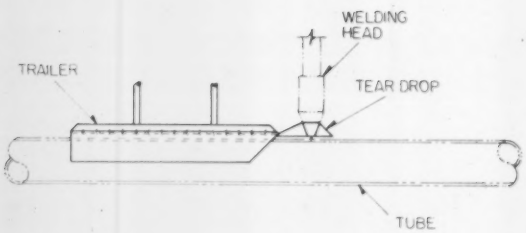
Zirconium strip feeds into the forming rolls of the tubing line

Welded Tubing Spurs Zirconium Use

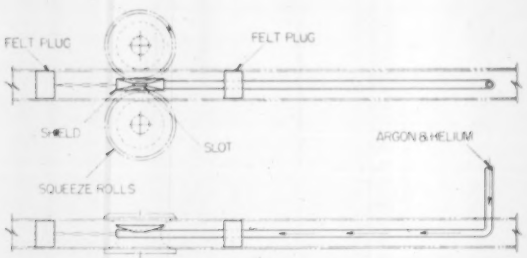
OF ALL THE new structural metals brought in by the atomic age, none holds more promise than zirconium.

- Its transparency to neutrons and its high temperature resistance make it a top priority metal for atomic reactors.
- Its excellent corrosion resistance makes it attractive for many civilian uses.

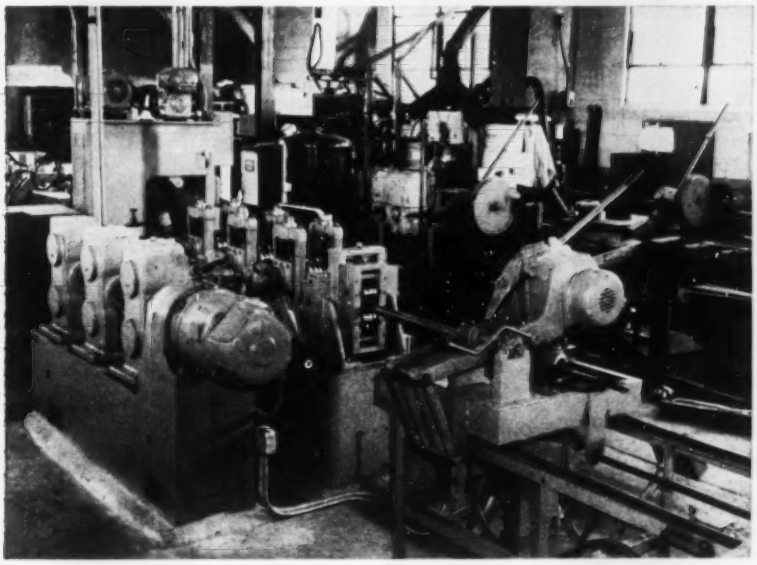
Early this year, good news for civilians came in the form of Atomic Energy Commission contracts for 11 million lb (STEEL, Aug. 12, p. 117). The action spurred new plant construction. Production will soon exceed gov-



A gas atmosphere is used for protection. The drawing (left) shows the trailer which follows the welding head. It provides a controlled atmosphere for cooling



the weld. The one on the right shows the felt plugs used to keep the argon and helium atmosphere in the welding area on the inside of the tubing



Formed tubing leaves the line cut to length

ernment requirements, making some of the metal available for nonatomic uses.

Tubing—Zirconium plays an important role as cladding for fuel elements and in other atomic applications. In civilian garb, it can be the raw material for vessels, valves, heat exchangers, and piping for many corrosive jobs.

Damascus Tube Co., Greenville, Pa., has developed a method for making tubing from zirconium strip or its alloy Zircaloy (tin 1.5 per cent, iron 0.15, chromium 0.1, nickel 0.05). It utilizes an argon-helium shielded arc in a continuous roll former line. The photos above were made when a sizable order was being processed for an atomic energy application.

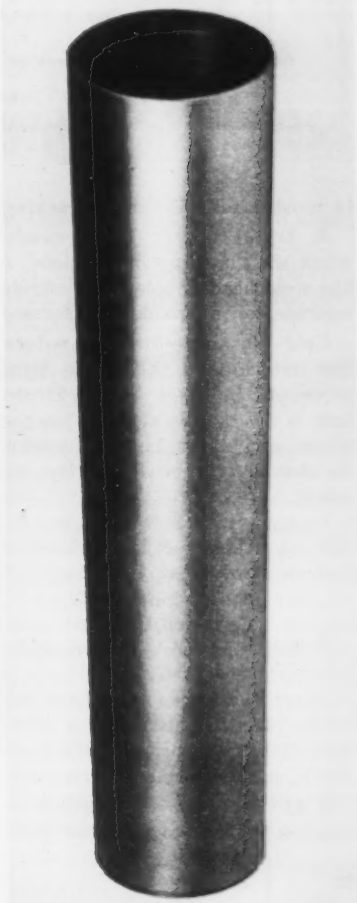
Method—The Damascus process uses outside and inside diameter shielding to keep out impurities. (Oxygen, hydrogen, and nitrogen at temperatures over 750° F affect zirconium's corrosion resistance, lower its melting point (3353° F), and reduce its transparency to neutrons.)

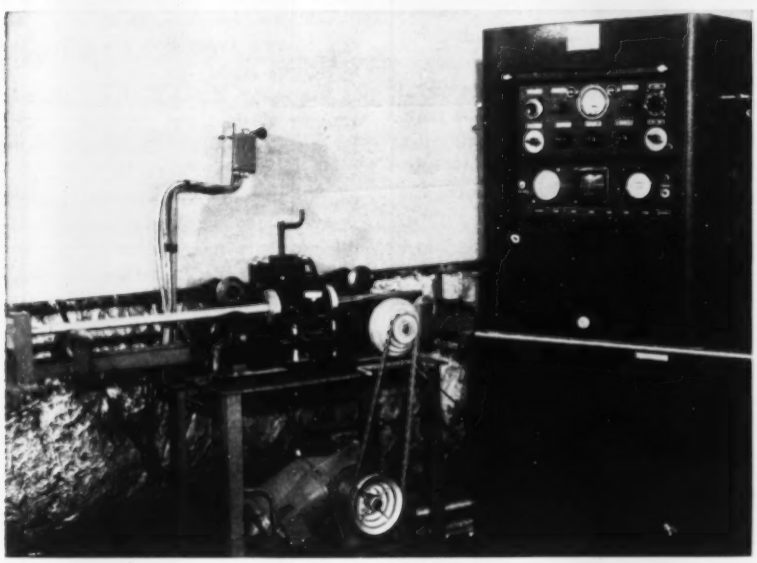
Strip in coil form is carefully threaded into the forming section of a tube mill until it reaches two squeeze rolls positioned under the welding head.

An inside gas tube with a shielded slot is placed directly beneath the arc. A mixture of argon and helium is used; felt plugs keep the gases from escaping.

The welding method uses a nonconsumable, thoriated tungsten electrode tip. A teardrop shaped cup holds the inert gas. It is followed by a gas shield which protects the outside weld bead and cools the molten metal as it leaves the arc. A water quench is not used since a severe quench

Welded zirconium tubing





Products for use in atomic energy require close testing. This eddy current device checks for internal defects

Applications of Zirconium

USES	ADVANTAGES
Nuclear reactors, fuel elements, piping	Low neutron absorption, high melting point, good corrosion resistance.
Plant equipment* (especially chemical) heat transfer elements, pumps, valves, sensing devices	Good mechanical properties, resists acids and alkalies, offers greater design freedom than nonmetallics.
Surgical pins and plates	Reliable strength, nontoxic.
Vacuum tubes	Acts as a "getter," nonvolatile, low vapor pressure.
Pyrotechnic uses	Increases efficiency of fluorescent lamps.
Fork lift trucks, hydraulic valves	Long life.
Fountain pen tips	Resists corrosion, wear.
Noxious gas scrubbers, spray nozzles	Easily fabricated.
Glass-to-metal seals	Coefficient of expansion near that of glass.
Rayon spinnerets	Maintains precise control of acid flow.

*Used in specialized parts where extra cost is justified.

in most cases will cause cracking.

A bright silvery finish results when the shielding is complete. If the weld bead is colored, a nitride, hydride, or an oxide has formed.

Cold Working—Swaging reduces the outside and the inside diameters of the weld bead. Zirconium is not ductile at room temperature and must be cold worked in easy stages or fracturing will result.

Swaging increases hardness. Annealing at 1450° F is necessary to relieve stresses at this stage. It is done in a vacuum of 1 micron or less to protect the metal from air contamination. The cycle takes 6 hours.

After vacuum annealing, the tubing is straightened in a standard 6 roll, 3 pass straightener. No special equipment is required.

Cold Reduction—If further reduction is necessary, a draw bench is used with or without a mandrel. Most specifications for reactor grade tubing require a mandrel for close tolerances.

Zirconium galls in metal-to-metal contacts. It causes pickup or tearing when it is drawn through a die. To eliminate it, the tube surface must be treated before the lubricant is applied.

Surfaces are cleaned in a 2 per cent hydrofluoric, 30 per cent nitric acid pickle bath at room temperature. Tubing is submerged in a phosphate or a fluorosilicate solution until an even coating is applied. It usually takes 5 minutes at an even, circulating temperature. The tubing is rinsed in cold water.

A soap lubricant is applied after drying. It is maintained at 180° F in a heated tank. The tubing is dried prior to drawing or sinking.

A reduction of 10 per cent is the maximum that can be safely taken without danger of fracture. A 30 per cent cold reduction can be made before vacuum annealing becomes necessary. Rockwell hardness (B98) is used as a safety guide.

A final anneal restores ductility and permits a finish straightening operation.

Annealing—Any oil, grease, or other film left on the tubing will enter into the metal during annealing. It destroys corrosion resistance and physical properties.

A vapor degreaser (trichlorethylene) and a light pickle rinse followed by a thorough water rinse assure proper cleaning. Pickling generally takes 3 to 5 minutes and causes a metal loss of about 0.001 in. from the tube wall. A bath of 2 per cent hydrofluoric and 30 per cent nitric acid is used.

Inspection—Pressure testing in a hydrostatic machine is followed by visual examination of the inside diameter with a Boroscope. Size, ovality, and straightness are checked.

An eddy current device detects internal defects.

Tensile strength, yield strength, percentage of reduction of area, and elongation are determined by physical testing. Flares and crush tests measure weld ductility and integrity. Welds may be checked with a helium leak test which determines weld area porosity.

Corrosion testing is done in an autoclave. Corrosion shows up as a weight gain.

Summing Up—Without atomic reactor needs, there probably would be no zirconium. Designers have looked to it as a replacement for aluminum in the newer, higher temperature reactors. Tangible evidence of its acceptance in current planning is the fact that 17 of 18 future reactors will contain zirconium.

The metal appeals to civilians because of its corrosion resistance. It works well in most organic acids, sulfuric acid in most concentrations, and nitric acid. Its resistance to hydrochloric acid and most chlorides is outstanding.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

This sprocket is used on a Caterpillar D-9 tractor. Switch to a boron bearing steel improved performance, trimmed off weight. Tolerances are checked on this fixture

Boron Deepens Casting Hardness

Used to make sprockets for crawler tractors, boron steel has better depth of hardness than straight carbon types. Sprockets and track parts wear longer

SPROCKETS for crawler tractors are being cast from a boron-bearing carbon steel refined in an acid open hearth.

Developed by Caterpillar Tractor Co., Peoria, Ill., and Harrison Steel Castings Co., Attica, Ind., it is said to be the first commercially successful use of such a steel. It is called Boralloy.

Advantages—The minute amount of boron in its composition (less than 0.005 per cent) improves depth hardening in heat treatment. First test samples, says Caterpillar, indicated that hardness depth was two and a half times that of a straight carbon steel of the same chemistry.

The tractor builder needed a heavier duty sprocket material when the horsepower and weight of its D8 tractor was increased. The search started at Harrison early in 1955. First heats were made in an acid open hearth, although previous experience was based almost entirely on the electric furnace method.

Reasons—C. E. Dickey, works manager at Harrison, says the acid open hearth is more easily controlled and more productive.

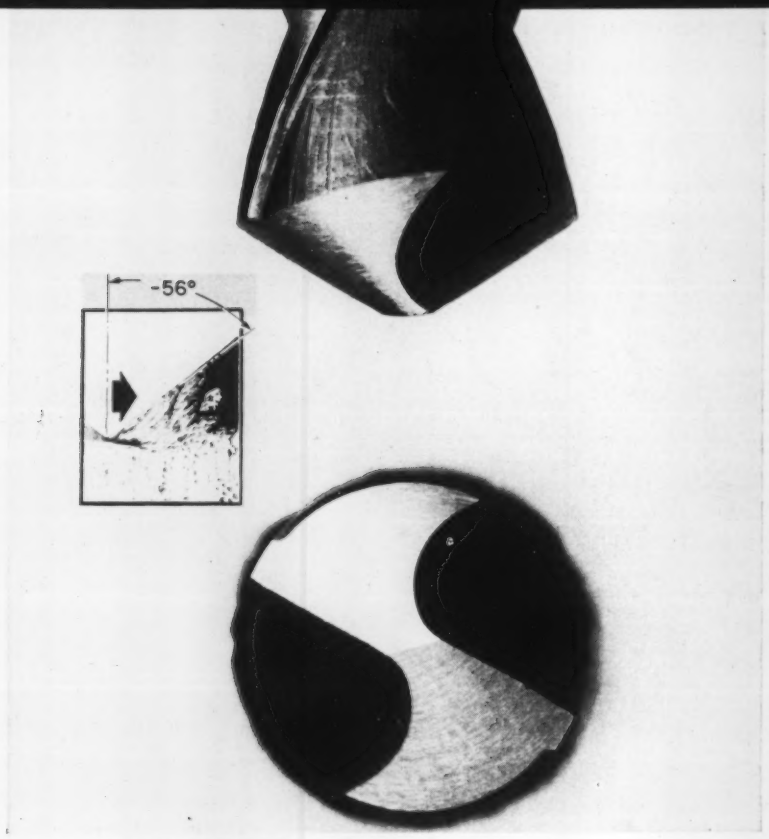
These factors, he adds, also contribute to the success of the steel:

1. Careful selection of scrap.
2. Rigid control of furnace schedule and timing of deoxidation practice.
3. Addition of boron compounds at the right time.
4. Exact chemistry of steel and amount of boron additions.

Final Analysis—Seven heats, of 25 tons each, were made to determine exact melting practice. From these the correct amounts of boron addition, deoxidation practice, yield, and the best method of working each heat were developed.

After tests were completed, Caterpillar changed the patterns of the sprockets to provide enough metal section to utilize the depth of hardness developed in the boron steel during conventional heat treatment. Regular production began in October, 1956.

A subtle change in point geometry apparently makes a big difference at work. Many who've seen it are asking: Is this the . . .



Standard drill grind has chisel edge at the center. There is no point to encourage centering of the drill. The advancing face of this edge has a large negative rake. The inset shows a cross section of this edge taken 0.020 in. from the center. High negative rake, poor cutting action, and crowding of the chip all are evident. The arrow indicates direction of travel

Next Step in Drill Evolution?

THE ONLY difference between the drill above and that on the facing page is at the point. But this difference may become the most significant improvement in drill geometry in recent years.

The new design is an attempt to get the drill point to do more cutting and less extruding of the workpiece. Dubbed the spiral point, the grind is being promoted by Cincinnati Lathe & Tool Co., Cincinnati. The company also is marketing a Spiropoint grinder that automatically puts the new grind on twist drills.

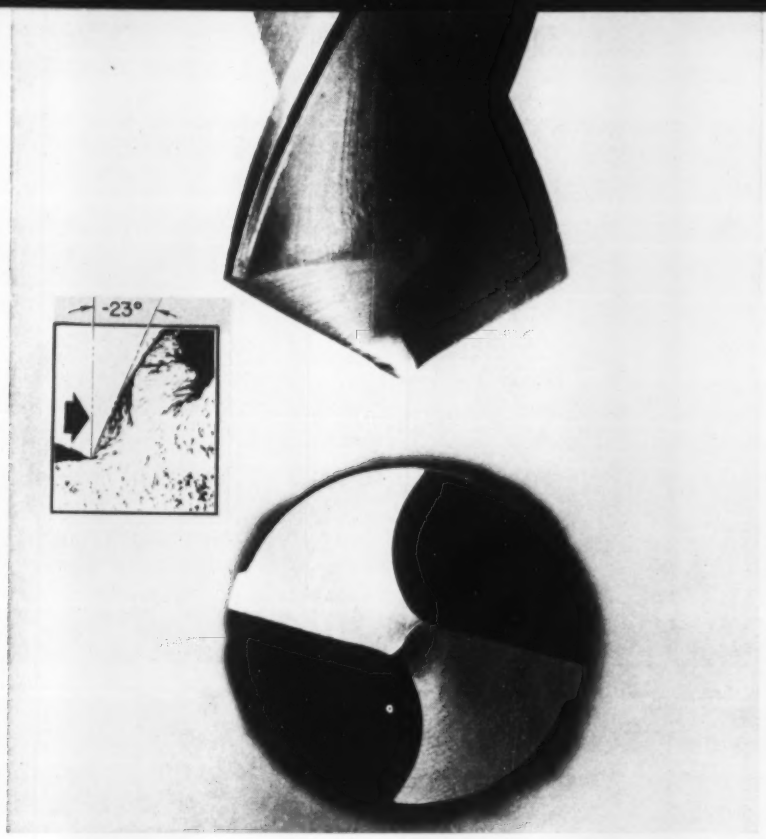
Assets—After more than a year of laboratory tests and field experience, the grind has proved itself as a tool capable of producing superior holes. Since the pointed center edge gives the drill the tendency to center itself, center punching and drill bushings often can be eliminated. Holes are not bell-mouthed. Also, the centering action means that holes will be closer to size. One maker of transfer drilling machines told STEEL he thought this ability would help him eliminate some reaming operations.

More efficient cutting of the drill point also reduces forces, particularly the thrust force on the drill. In a series of tests on five different steels, thrust forces on the spiral points ranged 15 to 34 per cent under those for standard drills. The difference is greatest for lower feed rates.

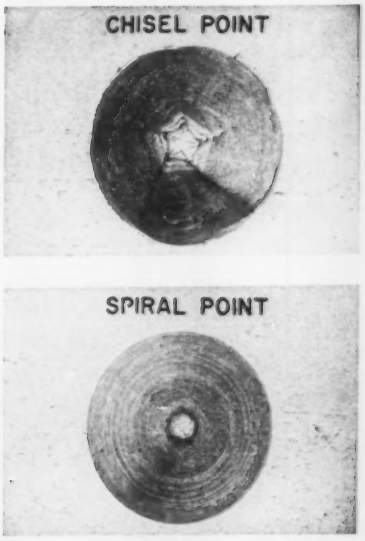
Tool Life—The first reaction of many who see the spiral point is to suspect tool life, thinking that the raised center might collapse. Yet, in the cutting data already piled up, spiral points show drill lives at least equal to standard drills, and in many cases far better.

Here are some case histories to show how they make out:

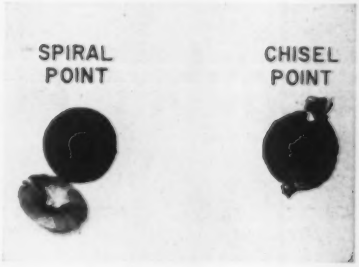
After 12 months on an automatic nut drilling machine, working 8650 steel at 800 rpm and 0.005 in.

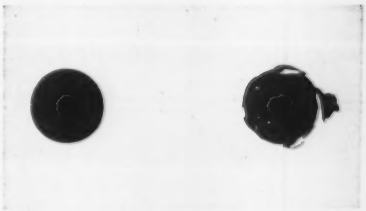


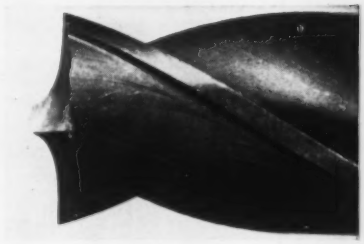
Spiral point drill grind has S-shaped edge at the center. A point at the drill axis aids self-centering. The large negative rake is reduced (see inset) so the edge becomes an effective cutting tool. This inset also shows a section 0.020 in. from the drill axis. Chips now are being sheared instead of extruded, and there is ample room for the chips to get out



These two holes were started under identical conditions. The top hole shows absence of centering with standard grind. Bottom hole was drilled with a spiral point and no prior center punching







Here's the spiral point grind for sheet metal drilling. Compare exit sides of holes drilled by hand (top) and those on machine with power feed (center). Spiral point holes are round, burr-free

per revolution feed, 21/64-in. spiral point drills have been producing 1600 to 1800 parts per grind. That's an average of six times the parts previously turned out with standard drills.

In an automatic machine that drills pivot pin holes in master brake cylinder blocks (cast iron), 25/32-in. spiral points average 3000 parts per grind to 1500 for standard drills.

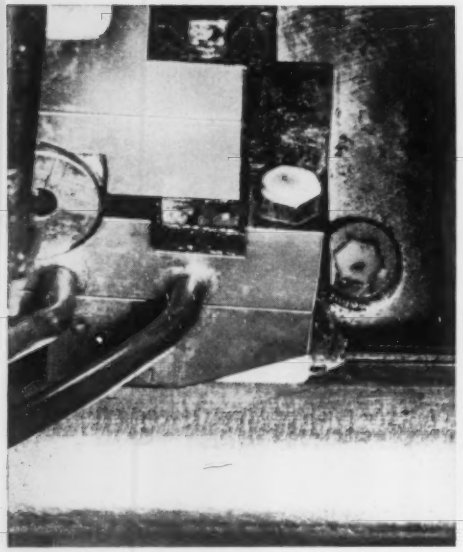
A field test shows how self-centering helps hole location. Specifications say that a ⅛-in. hole in piston pins must be within ±0.001 in. of the pin centerline. In one lot of 5000 pins, not one hole met the tolerances. In all lots, the tolerance was nearly impossible to hold with standard drills.

Under identical conditions, spiral points brought out-of-tolerance parts down to less than 5 per cent of production.

Proof To Come—The new drill point was introduced at Cincinnati Milling Machine Co.'s seminar (see Page 91). It was easily the top conversation piece at the meeting. Three automotive plant master mechanics and superintendents told STEEL they will take the idea back and try it out. They all hope to eliminate center punching and guide bushings from some jobs. One of them guessed he could eliminate part of a fixture and a reaming operation from a transfer line.

Despite the fact that several companies have been field testing the drills for more than a year, the proof will be in general application that is just getting underway.

With the new grinder, the geometry is as easy to grind as a standard point. It can't be ground offhand, and to many this is another advantage because it brings control of drill quality back into the toolroom.



The new method (left) uses two stationary shoes and little pressure to deliver welding current to tubing. Cooling connections are shown. Familiar rolls (right) use low frequency (440 cycles maximum) and heavy pressure

Republic Adopts New Welder

It uses high frequency current and little pressure to make welded tubing. Advantages include a smaller internal bead, less spatter, and better bending and flattening properties

TUBING is being made by high frequency resistance welding at Republic Steel Corp.'s Steel & Tube Div., Cleveland.

Its advantages are: 1. The internal bead is said to be smaller than usual. 2. There is less internal splatter caused by current fluctuations. 3. The heat affected zone is much narrower, which improves bending and flattening characteristics.

Progress—More than two years' research went into the system. Tubing has an outside diameter of 1 to 3 in. and wall thicknesses of 0.050 to 0.100 in. The equipment was made by the New Rochelle Tool Corp., New Rochelle, N. Y.

Republic made tubing (for boilers, mechanical uses, conduit, line and oil pipe casing) by the straight resistance method for years.

The ultrahigh frequency method is similar to the older method (called Johnston process): Current is applied to the edges of the tubing to produce an edge surface weld as it is formed. The new process operates at higher frequencies (450,000 cycles per second, compared with 440 maximum). Stationary shoes (shown in the photo above) with a built-in water cooling system replace the familiar copper rolls.

Requirements — Republic engineers say performance depends a great deal on correct alignment during forming since little pressure is exerted on the weld.

Side Benefits—In many cases, the customer does not have to remove excess flash because the internal beads are small. There is no saving, Republic says, if the flash must be removed by cutting.

Much mill tubing is rejected because of excessive internal splatter. Reduced splatter assures a cleaner inside surface. Reprocessing delays of special orders are fewer.

Fabricators who bend or form tubing no longer need to position the welded area. For severe forming, annealed tubing used to be recommended. Republic says that is not true of tubing made by the high frequency system.

mighty mobile muscles...

CHRYSLER INDUSTRIAL 32 (265 cu. in. displacement) powers the Crane Carrier Corp. carrier. Chrysler Industrial 30 (230 cu. in. displacement) powers the P & H Miti-Mite. Both are in-line 6 Engines used on many makes of equipment in the construction and materials handling field. There are four Chrysler in-line 6s, two V-8s—ranging from 230 to 354 cu. inch displacement.

Hard-hitting, fast-moving Chrysler-powered combination specially designed for a wide variety of "in-between" digging and lifting jobs. *P & H Miti-Mite* converts on the job to crane, shovel, dragline, trench hoe, clamshell, magnet crane. All transmission parts are encased in oil—work on anti-friction bearings. *Crane Carrier Corp.* carrier has rugged H-beam frame with all-welded construction. Both the *Miti-Mite* and the *Carrier* are powered by Chrysler for peak operating efficiency and minimum maintenance.

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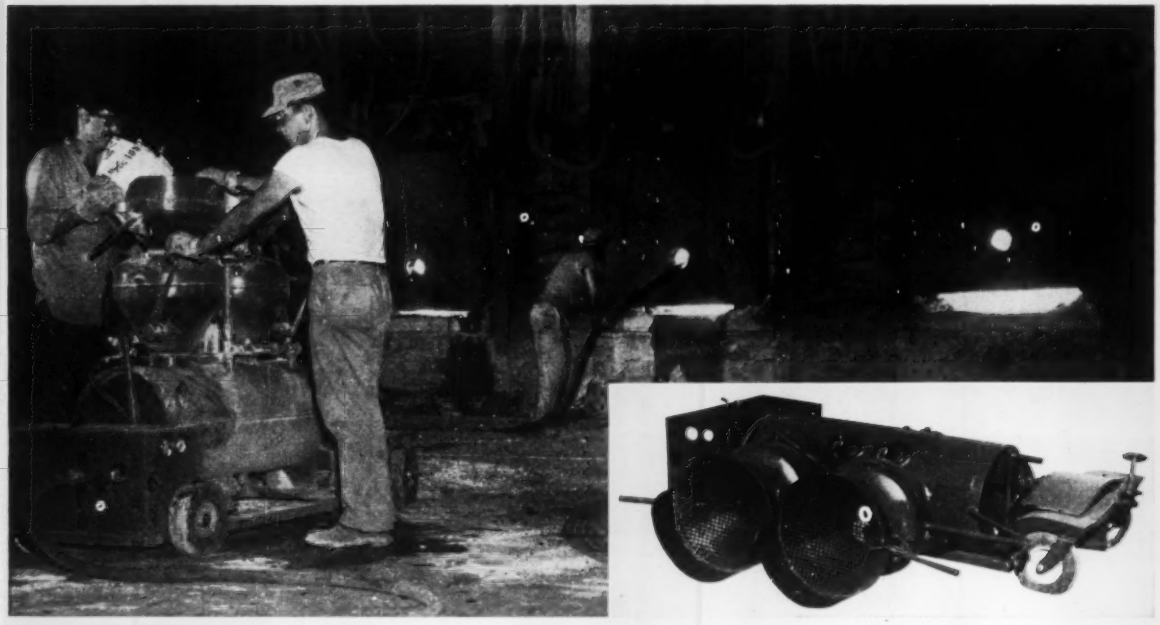


Workmen at left are loading half sacks (50 lb) into hoppers. Mix is fed continuously through flexible hose. Water is added at nozzle. Machine (inset) can be folded when fully loaded

Here's a New Gunning System

When fully loaded, it can be folded to one side for clearance of charging machines. It shoots 200 lb of gunning compound a minute. Batch mixing is not necessary

WORKMEN in the illustration are using a new refractory gunning system to repair an open hearth.

Developed by Kaiser Chemicals Div., Kaiser Aluminum & Chemical Corp., Oakland, Calif., it has been extensively tested in open hearth shops. Tap hole linings applied with the equipment last two to four times longer than manually applied types, say Kaiser personnel.

Feed—Batch mixing is not required. The mix is fed continuously into the system through two hoppers which are the main reservoir. At 40 psi, the gun shoots accurately mixed material at 200 lb per minute.

Clearance — The equipment is light and portable. Provision is made for folding it to one side so that a charging machine can pass. Other features: Automatic oiling, built-in water pump, and air dryers in the main reservoir to prevent caking of material.

Material — The machine is designed for mix made from refractory periclase grains which are 94 to 96 per cent magnesium oxide. Called Permanente K/R 165, the mix bonds itself into a crystalline mass at relatively low temperatures. A high content of MgO per cubic foot is said to insure durability.

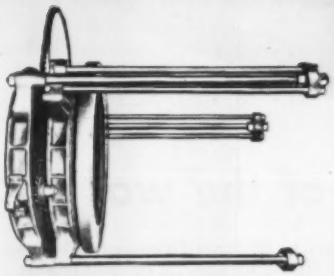
For Sale—The gunning equipment is being manufactured by Ridley & Co. Inc., Los Angeles. It weighs more than 1200 lb empty. It's 82 in. long, 56 in high, and 38 in. wide. When folded, the equipment is less than 23 in. high.

Choice — Two nozzle operations can be used. A lance attachment coupled to the nozzle does hot work on tap holes, skewbacks, and banks. For cold work (rebuilding and repair of furnaces, spouts, and runners), a nozzle tip is attached.

The built-in water pump replaces bulky reservoirs. Water is controlled by a hand valve at the nozzle. When the machine is off, a snap valve closes, preventing water backups which might set the mix and clog the gun.

Each unit also has a cutter which slices sacks of mix into 50-lb halves. Only three men are needed to operate the machine.

Meets Code—All units will stand 100 psi and conform to ASME code for unfired pressure vessels, as well as the National Board Code.



Thermal Expansion Type

Linear expansion of the thermal tubes frees the goggle plate for swinging to open or closed position. The contraction of the tubes clamps the plate, forming a gas-tight seal. Sizes: 36" to 120".

Mechanical Type

Powerful clamping force applied at all points around disc periphery provides a safe seal for gas mains from 6" to 84".

Bailey

GOGGLE VALVES

Bailey Valves assure safety plus efficient service on gas washers, blast furnace mains, precipitators and boiler plants. Bailey Valves operate satisfactorily, regardless of the length of time they may stand unused. Their dependability has been proven thoroughly by hundreds of installations in major steel plants.

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AMERICAN ORIGINALS IN IRON AND STEEL

Helping the iron industry out of the woods

Until as late as 1840, charcoal was the fuel universally used in making iron. Picturesque brick and stone furnaces were, of necessity, confined to the forests, for large quantities of it were needed to keep the furnaces in operation. Some consumed as much as 350 bushels of charcoal to produce a single ton of iron and many of the early ironmakers believed that at least four square miles of woodland should be available for each furnace.

During the first half of the century, important discoveries contributed to fundamental changes in ironmaking which later helped the industry "out of the woods." Early in that period, many experiments were made using anthracite and bituminous coal and mixtures of the former with charcoal.

In 1835, "cooked coal" or coke was first used successfully in this country by William Firmstone of Huntingdon County, Pennsylvania. Later, as the coke process proved increasingly successful, the familiar beehive ovens sprang up by the hundreds, permitting the construction of furnaces at locations more convenient to both markets and raw materials.

Of the many products that are contributing to the progress of the iron and steel industry today, Baker's Magdolite and Jebcolite, the original dead-burned dolomites, are especially identified with economical and efficient production. Through the years, these products have provided increased furnace efficiency and more uniform ingots at lower refractory costs. When you buy, be sure to specify Baker's Magdolite or Jebcolite. Today, they're better five ways; in composition, preparation, strength, economy, and quality.

ANOTHER AMERICAN ORIGINAL

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PRODUCTS
SINCE 1889

BAKER'S MAGDOLITE
The original dead-burned dolomite

THE J. E. BAKER COMPANY

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Better Joining

Here's a material that melts at 750° F. Joints are stronger, more corrosion resistant

A NEW joining material has been introduced by Intertectics Inc., Cleveland.

Although applied like braze metal, it's described as a chemical reaction process. Joints are stronger than parent metal and are corrosion resistant. Applications include joining of aluminum, copper, magnesium, titanium, brass, and similar nonferrous metals. It also will join dissimilar metals. Foils can be joined to thick plates.

Composition — The material is made of the chlorides of zinc, lithium, potassium, and sodium. It is housed in a ⅛-in. tube of almost pure zinc and aluminum alloy.

Method—Joints do not require preparation other than fitting. A furnace, torch, or other means can be used to heat the metal to 750° F. When joining wire is applied, the material melts and reacts with the oxide layer and the basis metal to form a eutectic. (The reaction lowers the melting point of the joining alloy below that of the basis metal.)

Uses — Intertectics expects the biggest immediate markets will be in aircraft and guided missiles, followed by electrical manufacturing and appliances.

One maker of electric frying pans plans to use Interact to fasten the heating element to the pan bottom. It is now cast integrally.

A cable company is testing the material for improved splices.

Automakers are using it in an attempt to join several aluminum diecastings.

One firm says it's attemping to use the wire in a standard, automatic welding gun.

Types—The firm also produces the material in powdered and granular form. One (Interact E) is recommended for joining broad areas. The other (Interact G) is better for lower temperature joining of foils and other broad surface materials.

Both materials must be used as soon as the container is broken. They attract water and become worthless.

Seminar Features Research

Tomorrow's planning begins in the laboratory, participants told. They also learn of new drill, a numerical control unit, and of recent progress in electrodischarge machining

HOW MUCH research should a machine tool builder be doing?

"Plenty" seems to be the answer at Cincinnati Milling Machine Co.

More than 1200 metalworking executives and engineers recently witnessed a Technical Activities Seminar at which Cincinnati researchers reported on a soup-to-nuts variety of projects. Their sights are on tomorrow as well as today.

Better Drill—The most intriguing conversation piece was the spiral point drill developed in the company laboratory. It has an S-shaped cutting edge on the point instead of the customary straight chisel edge. The two halves of the S are formed by intersecting arcs that leave a relatively sharp point at the center (see Page 84).

The tool is said to have these advantages: It is self-centering; it doesn't travel or crawl; it turns out rounder, straighter, and more precise holes; it may offer better drill life.

Cincinnati also has developed a Spiropoint grinder which it will market through its affiliate, Cincinnati Lathe & Tool Co.

Other Topics — Also discussed were: 1. The Digi-Log numerical control unit for either positioning or contouring. 2. Chipless machining on both Hydroform presses and the Hydrospin machine. 3. Reports of studies on machining high strength, high temperature resistant metals. 4. Progress in electrodischarge machining. 5. A progress report on ceramic cutting tools, hinting that some of them outperform all other known cutting materials on some jobs. 6. Better utilization of cutting fluids. 7. Factors affecting the wear of grinding wheels.

All's Quiet

Machine tool builders who look to Detroit for a large share of their income are getting impatient. Several programs have been brewing for several months.

Some builders are now guessing that the buying won't begin until the first quarter of next year . . . that the automakers will hold off until they get some indication of public reaction to 1958 models.

This also is borne out by Detroit spokesmen for the automotive companies. One buyer tells STEEL he doubts extensive programs will get underway until near the end of the first quarter next year. Even then, he guesses, the programs for 1960 models will not be as big as some the industry has seen in the last five years.

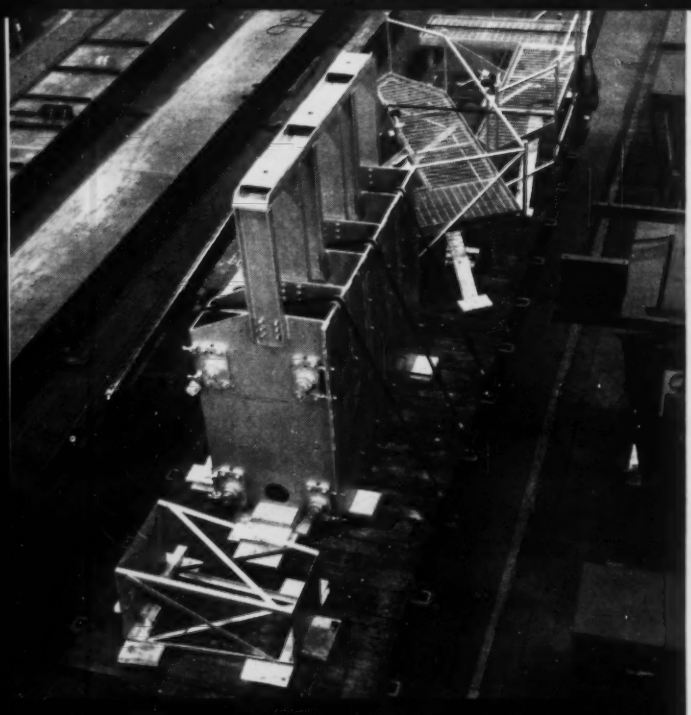
New Concept—This slowdown in automotive programs, and its seeming tendency to continue, has led many builders to think that this business level—near $700 million a year in orders—may be "normal." They advocate against considering this a slump.

Rotary Machine Takes Bars

Engineers at Avey Div., Motch & Merryweather Machinery Co., Cincinnati, have designed a rotary indexing table machine that works with extruded bars.

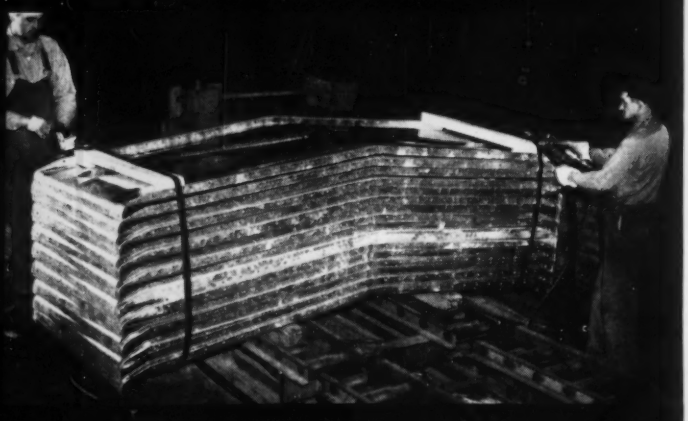
The machine consists of two cam feed units and a standard index table. The shaped aluminum bar stock is fed to a cutoff station where it's cut to length. The parts then are indexed to a broaching station. From there they go to gundrilling, counter-sinking and unloading.

The machine is turning out 300 parts an hour.



ACME STEEL **STEEL STRAPPING** secures and protects electric furnace for shipment by flat car. *(Idea No. U2-3)*

ACME STEEL **STEEL STRAPPING** unitizes aluminum ingots for better handling and storage. *(Idea No. U6-16)*



ACME STEEL **STEEL STRAPPING** unitizes steel stampings for easier handling and shipping. *(Idea No. U6-20)*

AIM* for better handling, protection, storage

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ACME STEEL **STEEL STRAPPING**

ACME STEEL **STEEL STRAPPING** braces loads of wire fencing for safe, secure shipment in gondola cars. *(Idea No. U3-1)*

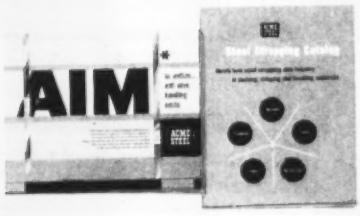
ACME STEEL **STEEL STRAPPING** machine bundles boxes of kitchen utensils for easier handling. *(Idea No. S2-14)*

ACME STEEL **STEEL STRAPPING** palletizes heavy wheel and brake assemblies for fast, mechanical handling. *(Idea No. U6-19)*

ACME STEEL **STEEL STRAPPING** applied with pneumatic tools speeds unitizing of cold-drawn steel bars. *(Idea No. U6-18)*

2 IDEA BOOKS

These two information packed Acme Steel Idea Books are available to you on request. They will provide dozens of clues to better ways to package and protect your products and plant output.



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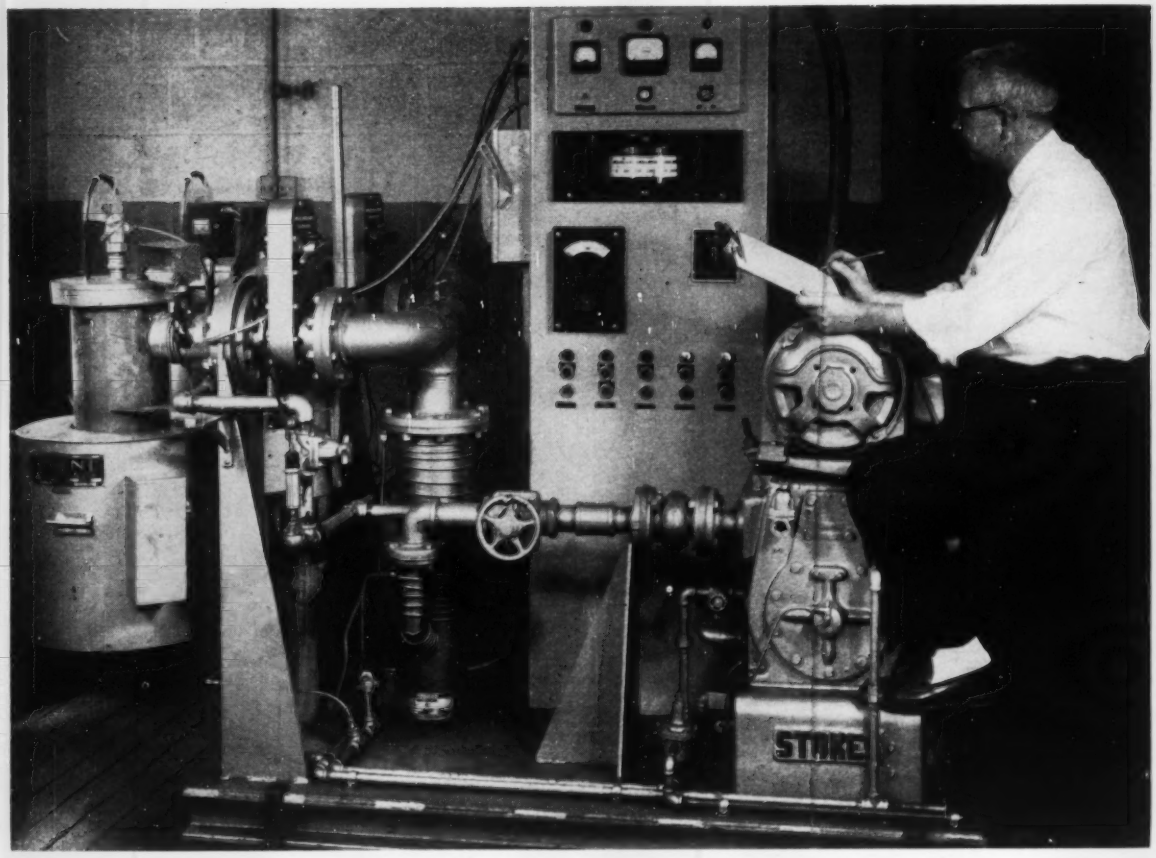

The pumps, controls, and furnaces form a compact unit. The unit uses a Stokes Model 435 furnace

Vacuum Heat Treating Hairsprings

It prevents the formation of surface oxides on the delicate parts, gives better physical properties, and results in fewer rejects. Dual retorts give maximum utilization of furnace

By TOM RAEDY
Assistant Superintendent
F. N. Manross & Sons Div.
Associated Spring Corp.
Bristol, Conn.

HAIRSPRINGS, precisely formed coils of wire often finer than a human hair, are being heat treated under a vacuum to meet more exacting performance requirements.

They are used in service with vibrations of ultrasonic frequency, temperatures ranging higher and lower than ever before, and corrosive atmospheres.

Improved Materials — Ni-Span "C," the metal used, has a constant modulus of elasticity from minus 75 to plus 220° F.

It is a nickel-chromium-iron-titanium alloy. A small percentage of titanium makes it precipitation hardening. High elastic limits are obtained without brittleness.

Beryllium copper is used where high strength and low hysteresis must be combined with electrical conductivity.

Stainless steel can be used in corrosive applications and at high and low temperatures, but its

FORGINGS

FORGINGS

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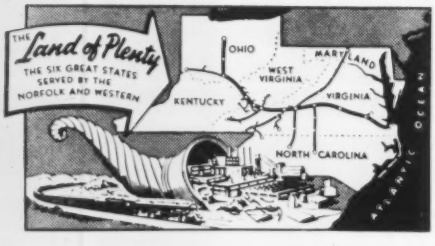
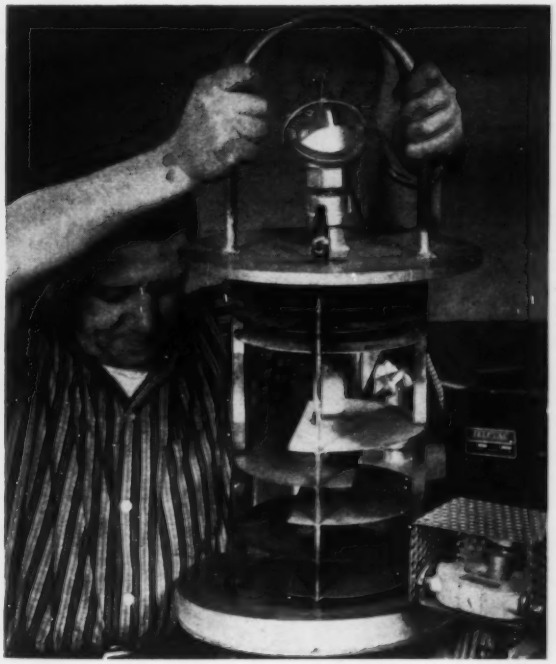


Norfolk and Western RAILWAY

Springs are placed in a wire basket and lowered into one of the two retorts of the furnace. The retort is evacuated and heated



A baffle is placed in the retort above the basket. It keeps the heat low down in the retort and prevents the springs from being sucked out

elastic limit is inferior to that of high carbon steel.

These alloys require heat treating at high temperatures. If they are treated by conventional procedures, in normal atmosphere, surface oxidation results.

Effects of Oxides — The high ratio of surface area to thickness, characteristic of these parts, requires a fine surface finish to obtain good properties.

In addition to reducing mechanical properties, the oxide may flake off after the spring is installed. In most delicate instruments, this can damage other elements.

The parts are wound and hardened in multiple. Oxidation will cause them to stick together, so that they are deformed while being separated by tweezers.

Secondary operations such as soldering or brazing during the assembly demand a clean surface finish. Vacuum heat treating is used to meet surface finish requirements.

Dual Retorts—The furnace used has two retorts for holding the work. They can be connected to the manifold of the single evacuation system either separately or together. A vacuum of 0.005 microns can be produced.

A movable, resistance-heated furnace is mounted on a vertical shaft. It can be raised up around the outside of either of the retorts. Maximum use of the furnace is possible since one unit can be loaded and evacuated while the other one is being heated.

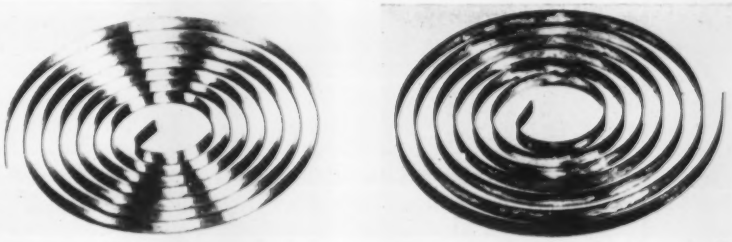
Heating elements are differentially spaced to assure uniform distribution of heat in the working zone, which is 8 in. high and 8 in. in diameter.

Heat Treating—The springs are wound from cold-rolled metal. From 2 to 30 strips (depending on the thickness of the metal) are placed together in a multilayer sandwich and wound on a spiral arbor.

The metal cylinder formed is similar to a shallow cup. It is loaded into a wire basket and placed in one of the open retorts of the furnace.

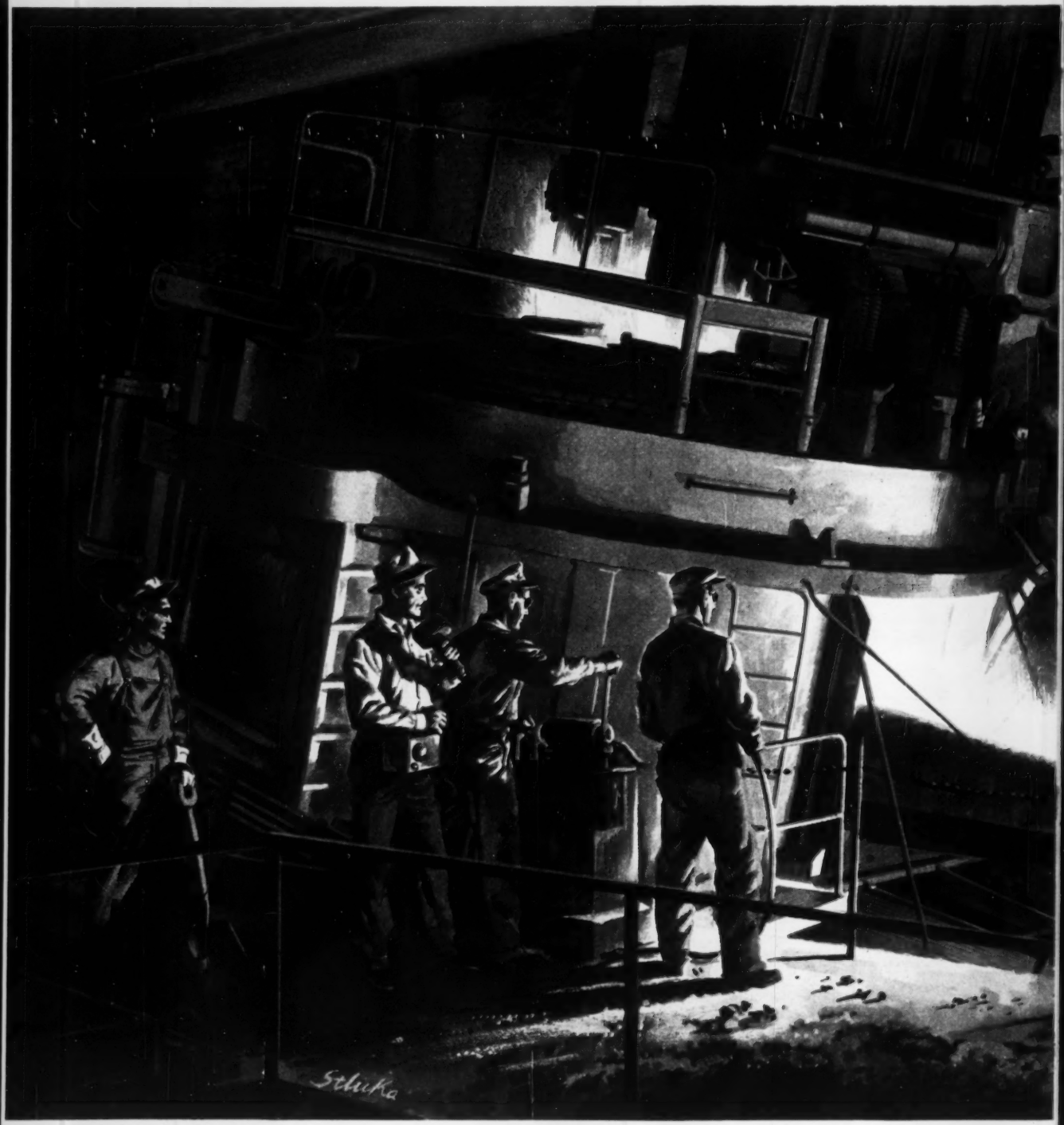
One batch may contain from 200 to 3000 springs, which have a value of as much as $2000.

After heat treating, the springs are left to cool to room temperature in the evacuated retort.



Spring on left was heat treated in a vacuum. Spring on right was treated in a conventional atmosphere

ALLIS-CHALMERS.



Products for steel: motors, m-g sets, control, pumps, *Texrope* drive equipment, crushers, mills, screens, rectifiers, transformers, substations, switchgear, circuit breakers, turbine-generators, voltage regulators, blowers, compressors, synchronous condensers, and water conditioning equipment.

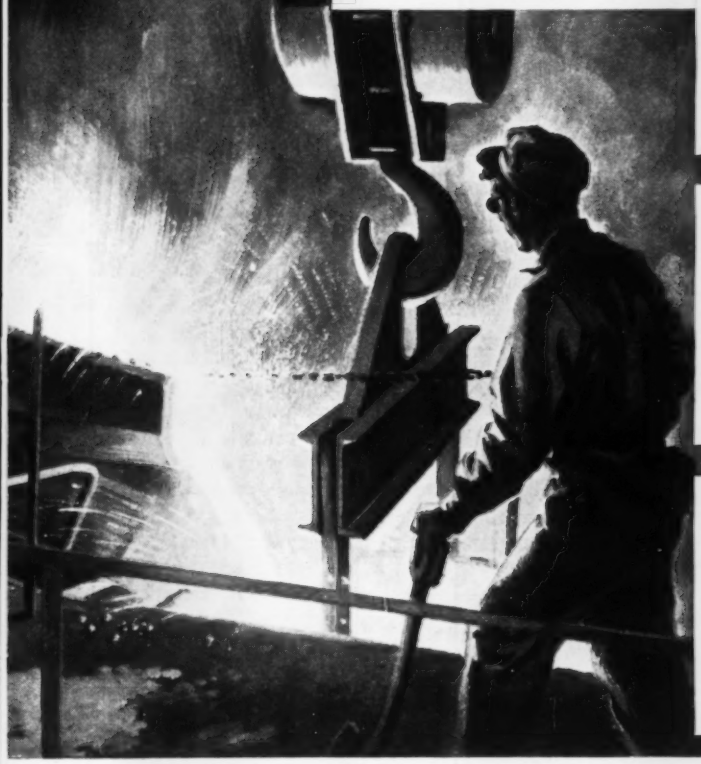
ALLIS-

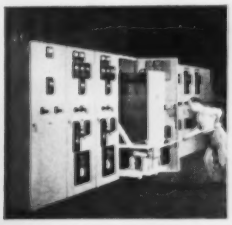
. in Step with STEEL

The arc furnace

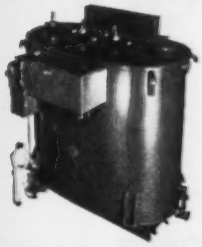
Reduced costs result when Allis-Chalmers control, transformers and switchgear are specified for arc furnace application. The reason: A-C offers these products as a specially-integrated electrical system — designed by experts in furnace requirements and backed by Allis-Chalmers 75 years of experience in supplying equipment to the steel industry.

Wherever steel goes — from mine to final processing — Allis-Chalmers equipment is available to keep quality high, keep steel moving fast and profitably. Contact the A-C representative in your district, or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

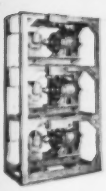




Arc furnace switchgear provides safe, dependable protection for transformer and related equipment. Special alloys assure long arcing contact life under severe interrupting duty, keeping maintenance and downtime to a minimum.



Transformers are of well-balanced designs and built for heavy duty . . . performance has been proven in 25-30 years of repeated daily short-circuits in electrical furnace operation.



. . . and Control requirements are met by Magnetic Amplifier and *Regulex* controls which balance arc current with arc voltage to maintain desired arc condition automatically. These controls result in high tonnage per kwhr, long life for electrodes and furnace linings, and a minimum of maintenance.

CHALMERS

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Regulex and *Texrope* are Allis-Chalmers trademarks.

A-5363

Heavy gage steel gas cylinders (above) are an example of an extreme pressure draw. Punch moves down while die remains stationary. Dry film is lubricant here

Choose the Right Lubricant

Characteristics of each type affect ultimate choice. In this concluding article, author explains effects of several and the action of certain additives

PART TWO

DRAWING compounds are divided into five categories: Oily agents, extreme pressure, emulsifiers, diluents, and inhibitors.

Manufacturers select compounds or blend them to fit the job. Here are the characteristics of each:

Oily Types—These are organic compounds. They have an atomic arrangement that tenaciously adheres to metal surfaces. That is due to certain elements (polar groups) present in fatty acids, fats, and alcohols.

Such materials resist pressures well over 100,000 psi. By comparison, the pressures in ordinary bearings are only a few hundred pounds.

The most common oily agents are fatty acids (stearic, oleic, and palmitic), fatty oils and fats (tallow, lard, castor and neat's-foot oils), soaps (sodium and potassium stearate, sodium oleate), waxes (beeswax and carnauba) and synthetics (partially esterfied glycerides and polyalkaline glycols).

Pressure Types—Under extreme pressures and temperatures, oily materials become disoriented. Extreme pressure (EP) agents are the answer.

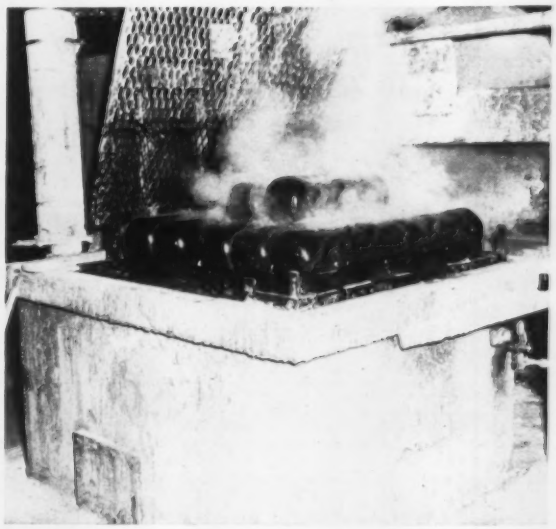
An EP lubricant is any material that prevents welding of moving material at high temperatures and pressures.

Chemical types release a substance that reacts with the metal, forming a film which resists welding. Chlorinated or sulfurized compounds are the most widely used.

Mechanical types are chemically inactive and perform their job by separating the moving metals. Most widely used spacing agents or pigments are chalk, mica, graphite, and zinc oxide.

Chlorine Types — The better known sulfurized compounds are

Blanks placed in this die are first brushed with a lubricant (background). Workmen wear gloves to protect skin from harmful chemicals that may cause dermatitis



Partially drawn gas cylinders receive dry film lubricant by being immersed in a water solution. Heat and pressure of draw liquefy the film, preventing wear

rapidly being replaced by chlorinated types. They are more efficient antiweld agents. Their thin, light color and lack of foul odor appeal to operators. In addition, compounds which combine oiliness and EP qualities have been developed.

Chlorinated compounds are especially useful on stainless and alloy steels. You must use care in applying them to carbon steels because partial decomposition to hydrochloric acid causes corrosion. Copper falls into this class due to the formation of greenish-blue copper chlorides.

Sulfur Types—Sulfurized mineral oil has a maximum of 1.5 per cent sulfur. It is light colored or transparent.

Sulfurized fatty oils and fats are either corrosive or noncorrosive. The corrosive contains about 16 per cent sulfur, the noncorrosive about 12 per cent.

The most widely used additives for EP lubricants, they are dark brown.

Miscellaneous types are prepared by reacting sulfur with fat derivatives, terpenes, and the like.

The effectiveness of sulfur compounds depends on their activity and the amount of sulfur used. An active compound releases sulfur readily at high temperatures and pressure. It reacts with the punch, die, and work, forming sulfides.

Such compounds are corrosive and should be used mainly for ferrous metals. They are more efficient than the noncorrosive types, which are better for copper, brass, and bronze.

Spacers — Chalk, borax, lithopone, zinc oxide, talc, graphite, and mica are typical agents. Talc, graphite, and mica are often called solid lubricants since they don't pulverize under pressure. They are probably not as efficient separators as the others.

Emulsifiers — Insoluble components must be dissolved in water. That's the role of emulsifiers.

Soaps are most widely used. They also function as oily agents. Potassium soaps dissolve more readily and are usually preferred for liquid and paste compositions. Sodium soaps are better for hard or dry films.

If heat treatment follows the draw, a soap compound must not leave a residue. Such types are often made by saponifying a fatty acid with triethanolamine (an organic alkali).

Soluble oils are a combination of soaps and mineral oil sulfonates or emulsifiers. They feature rapid dispersion of water, rust protection, and hard water resistance.

Diluents—These low cost materials act as carriers or extenders for more costly material. Water, mineral oil, and petroleum solvents are common. They assist in heat dissipation, a more important contribution to good drawing than cost reduction. Water is about twice as effective as petroleum oils as a coolant.

Inhibitors — Small amounts of complex chemicals can eliminate or minimize undesirable properties. Examples: Rust, foam, bacteria, and oxidation.

Metal Coatings—One of the latest developments involves chemical or metallic coatings sometimes applied to ferrous metals.

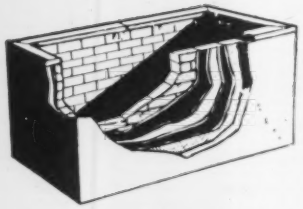
Phosphate coatings have been gaining popularity. Although costly, they are valuable in severe drawing. Antiweld protection is enhanced. In addition, the sponge-like coating retains the lubricant.

Oxalate coatings on stainless steels serve a similar purpose.

Soft, ductile metals deposited on alloy steels, especially stainless, reduce the severity of difficult draws. Such metals (copper, lead, zinc, or tin) are applied electrolytically, by hot dipping or chemical displacement.

• *An extra copy of this article is available until supply is exhausted. Part I appeared last week. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

the most enduring way to ... STOP CORROSION



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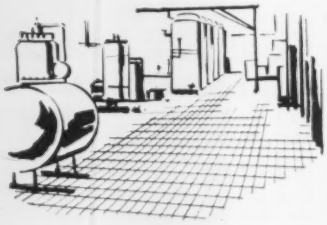

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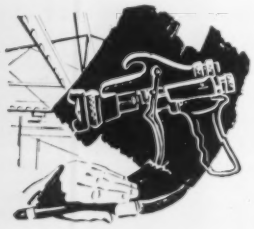

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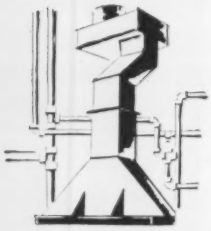

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Tear out this ad and check the block where corrosion protection is most needed in your plant. You will receive a complete bulletin giving all technical information.

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TECHNICAL REPRESENTATIVES THROUGHOUT THE UNITED STATES

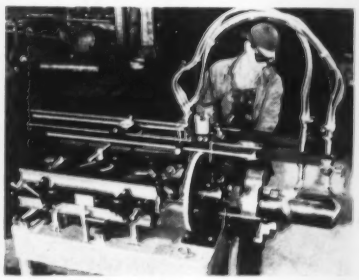
Contour Cutter

Using an oxyacetylene torch, it shapes pipe ends to fit complex shapes in 3 to 5 minutes

CUTTING pipe ends to fit complex shapes is comparatively simple with a device perfected by the Steffan Engineering Co., Salem, Ohio.

Called the Mechanical Draftsman, the machine uses an oxyacetylene cutting torch controlled by adjustable cams. The pipe is held in a chuck as on a lathe.

The inventor, S. A. Grubish, stated that the Martin Co., Baltimore, slashed its pipe fabricating costs 75 per cent with the machine. The savings are important to aircraft manufacturers because pipe is used for assembly fixtures.



CUTS PIPE

. . . without template or pattern

No Templates — The machine manipulates a cutting torch without patterns or manual layout. It mechanically performs all the functions of a draftsman. Jobs which normally require hours can be done in as little as 3 minutes.

How It Operates—A length of pipe is inserted in the three-jaw chuck, which is tightened. The chuck is turned by a variable speed, electric motor.

The data for the cut (dimensions of the pipe being cut and of that being intersected; angles of intersection and relative position of center lines) are transferred to several dials and scales. The operator pushes a few buttons and the cut is automatically completed. Torch settings and ignition are electrically controlled.

Cuts are said to be precise and smooth enough for welding without further preparation.

Copper Plating Process Simplifies Control

This bright cyanide copper plating process uses a combination of additives to provide long life and stability.

Only one chemical determination and a single Hull cell test are required to control the additives. The exceptional stability of the proprietary materials eliminates the problem of products decomposing in the plating bath.

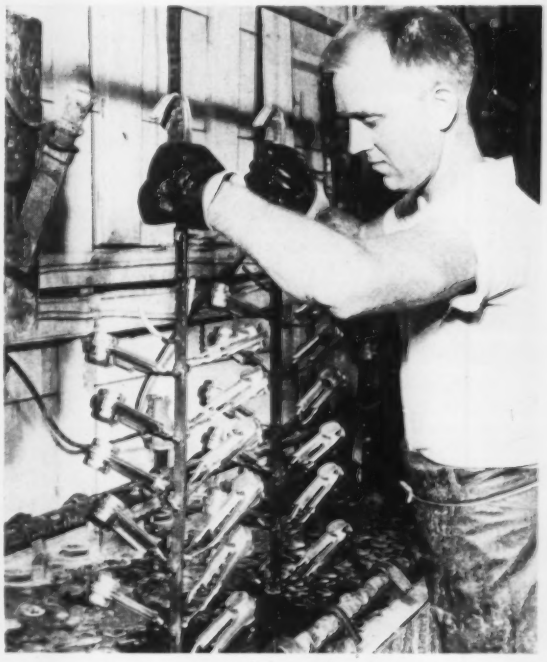
Uniform brightness, mirror bright or less, can be obtained to meet specific requirements.

The process can be used to give a final finish because of its eye appeal.

The solution can be made with sodium or potassium salts. Cathode current densities range from 10 to 60 amperes per sq ft. The wide bright plate range at high cathode efficiency assures high rates of deposition without burning on edges or dullness in recessed areas.

One bath additive, Neochel, is used to improve anode corrosion and minimize rough deposits. Two brighteners and a wetting agent are the other additives.

The process can be used with automatic, still, and barrel plating. *Write*: Metal & Thermit Corp., Rahway, N. J. *Phone*: Fulton 1-3000



Gear Line Is Used To Build Reducers and Gear Motors

Moduline is a line of gears which uses seven new frame sizes to replace over 20 conventional gear motors, eight speed reducers, and many smaller specialized geared drives.

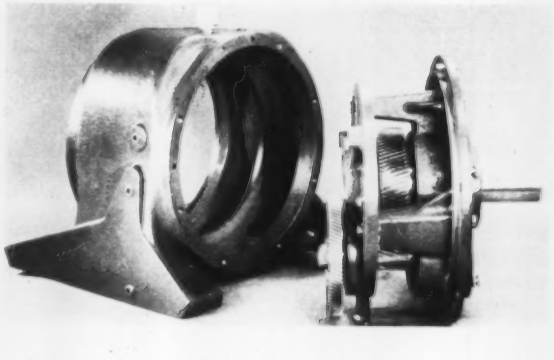
Basic components are the gear case and a low speed cage. The low speed set of gears has a 5:1 ratio. It is inserted into the gear case from the output end and supported by an outer ring of bolts and an internal flange in the case.

The cage has a high bearing capacity. The use of oversize bearings plus the rear support for the cage assures overhung-load capacity for almost any sprocket or pulley mounted on the outputshaft.

Almost any kind of reducer or gear motor can be built using the case and the low speed cage as a starter. The pinionshaft is splined and threaded for mounting a change gear with a splined bore.

A double reduction, concentric shaft speed reducer is assembled by mounting a pinion on the splined inputshaft of the reducer bracket to mate with the change gear mounted on the cage.

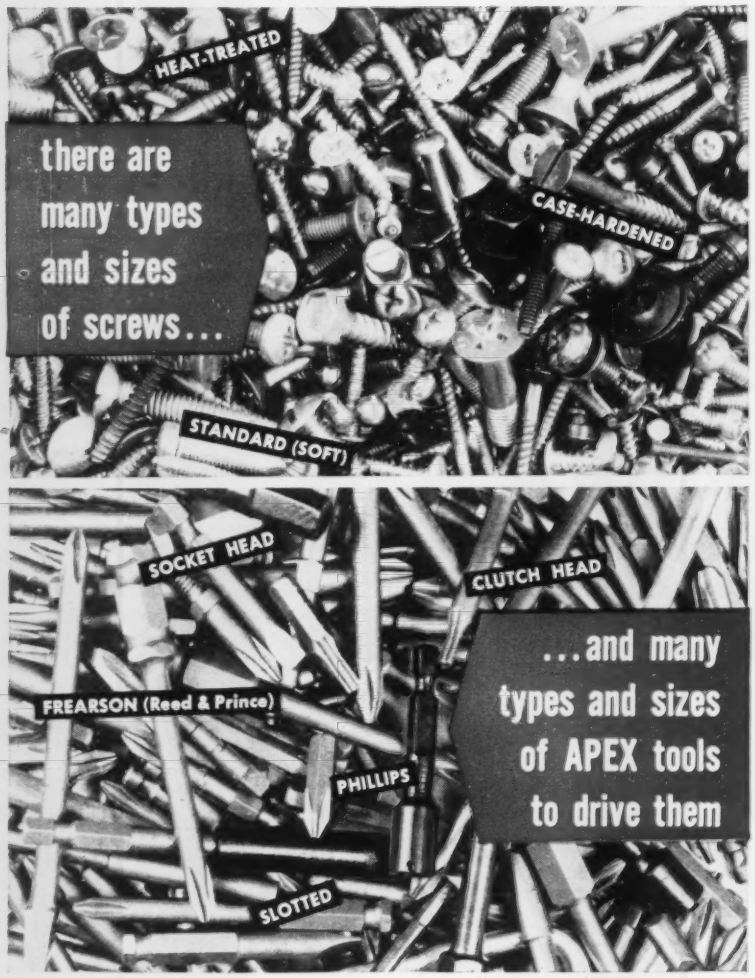
Change gears and pinions are available with nine standard ratios between 1:1 and 5:1. This gives a maximum over-all ratio of 25:1 in conjunction with the gears in the cage.



If a triple or quadruple speed reducer is needed for gear ratios up to 625:1, another cage assembly is mounted ahead of the change gears before the reducer bracket is bolted on.

Integral gear motors are built up by replacing the reducer bracket with a flanged motor for double, triple, or quadruple reduction.

Right angle, vertical, shaft mounted, and other types of drives are built by other variations. *Write*: Westinghouse Electric Corp., 401 Liberty Ave., Box 2278, Pittsburgh 30, Pa. *Phone*: Express 1-2800



APEX—authority on fastening—offers the most complete range of screwdriving tools, and every one is designed for a specific screwdriving application.

For example, Apex insert bits are available in 18 different heat treatments. Whether you're driving soft screws, heat-treated screws, or case-hardened sheet metal screws, you can select an Apex insert bit exactly suited to your requirements.

If you drive Phillips, Frearson (Reed & Prince), Slotted, Clutch Head or Socket Head screws, you can reduce your fastening costs with Apex Screwdriving Tools. For complete information, write, on your company letterhead please, for Catalog 25 (Magnetic Tools) or Catalog 21 (Standard Tools).

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THE APEX MACHINE & TOOL COMPANY
1032 S. Patterson Blvd. • Dayton 2, Ohio

ATLANTA • BALTIMORE • BATON ROUGE • BIRMINGHAM • BUFFALO • CHARLESTON
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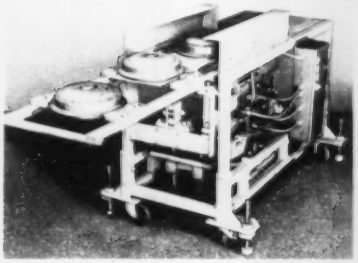
NEW PRODUCTS and equipment

Feeder Handles Stampings

This portable automation unit can be adapted to handle a wide variety and many sizes of stampings. It is a standard lift-and-carry combination transfer feeder and unloader.

The unit can be used to load and unload one press, or it can be placed in a line of presses with a continuous transfer bar to provide an automated transfer line.



The lift mechanism operates in a vertical direction under the control of guide bars. Parts can be placed over gage pins for accurate location. Lift and transfer motions have adjustable strokes.

Electrically controlled air cylinders govern the motions of the transfer bar in the feeder and unloader. One cylinder raises and lowers the bar assembly; the other controls the forward and reverse motion. *Write*: Press Automation Systems Inc., 25418 Ryan Rd., Centerline, Mich. *Phone*: Jefferson 9-7750

Adjustable Speed Drives

This line of packaged drives comes in ratings of 3 to 150 hp. The regulators use silicon rectifiers.

The regulator provides smooth, timed acceleration and deceleration to preset speeds in addition to voltage regulation.

The static excitation system also uses a silicon rectifier and requires no warmup period.

The Speed Variators can handle greater overloads and deliver peak power as a result of improved commutating ability and insulation of the motor-generator sets.

The units are designed for use on continuous processing lines, machine tools, crane hoists, metal

CALL CRUCIBLE FOR PRECISION-ROLLED STAINLESS STRIP

Crucible offers you precision-rolled stainless strip—in all standard grades —that is unsurpassed in uniform quality and finish. And when you buy from Crucible, you get these qualities consistently in coil after coil, no matter how many you order. »»»» *Remember:* Crucible's operations are fully integrated from raw material to delivery to you—a fact that assures you of high quality and prompt, dependable service. *Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

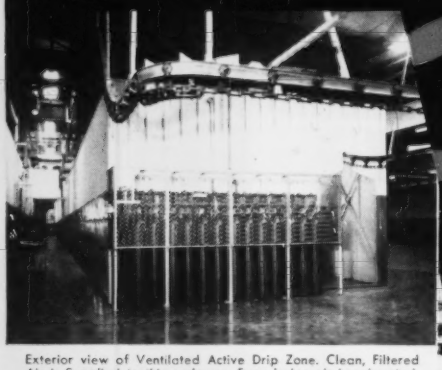
CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

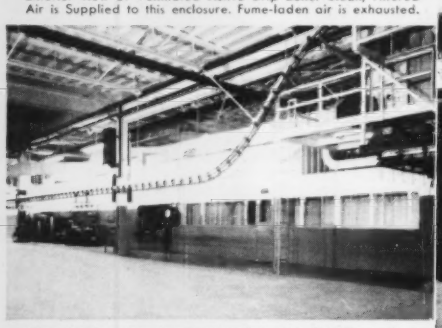
Canadian Distributor — Railway & Power Engineering Corp., Ltd.

COMPLETE *Finishing* SYSTEMS

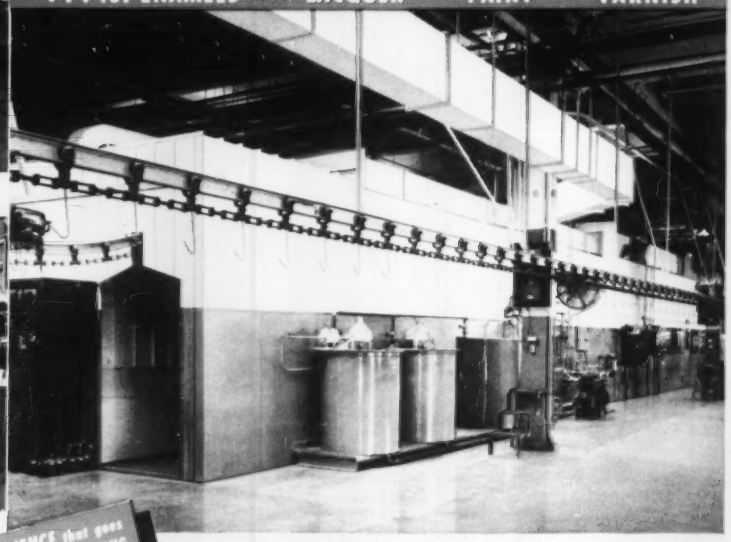
. . . for ENAMELS • LACQUER • PAINT • VARNISH



Exterior view of Ventilated Active Drip Zone. Clean, Filtered Air is Supplied to this enclosure. Fume-laden air is exhausted.

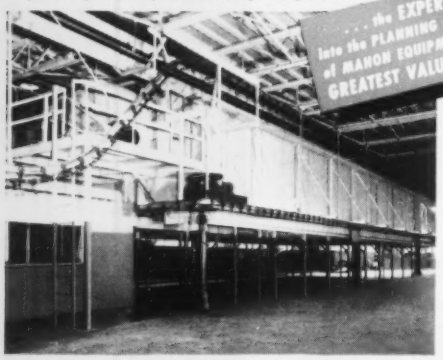


View showing glass in one side of Inactive Drip Zone where parts may be seen prior to entering Baking Oven.

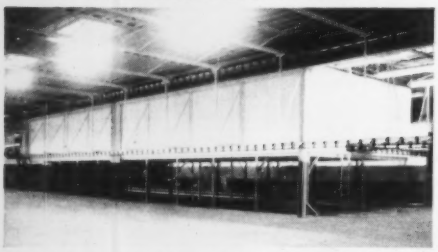


View of Mahon Flow-Coating Equipment at Chrysler Corporation of Canada, Limited. This is part of a Complete Mahon Finishing System for Coating Black Enamel Parts.

. . . the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the Item of GREATEST VALUE to YOU!



View of Mahon 450° Enamel Baking Oven. Oven is built against ceiling trusses to provide parts storage space below.



Another view of the Enamel Baking Oven. Finish is baked for 20 minutes at 450° in this 80 Ft. x 24 Ft. Mahon Oven.

Black Enamel Parts at CHRYSLER CORPORATION of CANADA, LIMITED, are FLOW-COATED in MAHON FINISHING SYSTEM!

In addition to the body finishing system at the Windsor plant of Chrysler Corporation of Canada, Limited, Mahon also installed a complete finishing system for black enamel parts. This is a Flow-Coating System which includes a Mahon Flow-Coating Machine, a Ventilated Active Drip Zone, a Ventilated Inactive Drip Zone, and a 450° Finish Baking Oven with storage space below. Two Enamel Mixing Tanks and a Solvent Tank are provided outside the enclosure. The recirculating unit is equipped to automatically maintain the enamel at a specific temperature in the Flow-Coating Chamber. This is a typical Mahon Flow-Coating System, complete in every detail—automatic from start to stop. If you have a finishing problem, or are contemplating new finishing equipment, you will find that Mahon engineers are better qualified to advise you on both methods and equipment requirements . . . and better qualified to do the all-important planning and engineering of equipment—which is the key to fine finishes at minimum cost. Whether your job is to be Flow-Coated, Dip-Coated, or Spray Painted either Manually or by Electrostatic Process, you will find that Mahon equipment will serve you better, because it is engineered better and built better for more economical operation over a longer period of time. Mahon will do a complete job for you on one contract—undivided responsibility for the entire system insures proper coordination and safeguards you against complications which can upset your production schedules. See Mahon's Insert in Sweet's Plant Engineering File, or write for Catalog A-657.

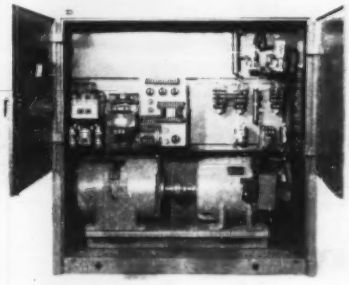
THE R. C. MAHON COMPANY • Detroit 34, Michigan

SALES-ENGINEERING OFFICES in DETROIT, NEW YORK and CHICAGO

Engineers and Manufacturers of Complete Finishing Systems—including Metal Cleaning, Pickling, and Rust Proofing Equipment, Hydro-Filter Spray Booths, Dip and Flow Coaters, Filtered Air Supply Systems, Drying and Baking Ovens, Cooling Tunnels, Heat Treating and Quenching Equipment for Aluminum and Magnesium, and other Units of Special Production Equipment.

MAHON

NEW PRODUCTS and equipment



rolling and blooming mills, and wherever adjustable speed or fine control is needed.

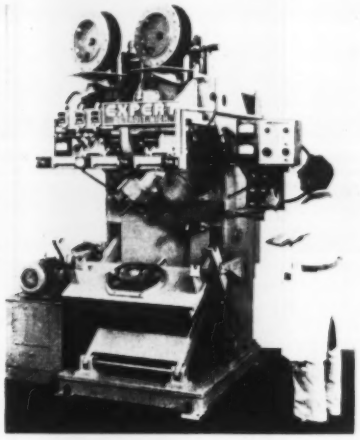
The power unit converts alternating current to direct current for the drive motor.

An infinite variety of speed ranges is possible by controlling armature voltage and field current. Speed ranges of 200:1 and higher are obtainable. *Write*: General Electric Co., Schenectady 5, N. Y. *Phone*: Franklin 4-2211

Automated Welder

This single station machine produces linear reinforcement welds on the inside seam of the banjo section of rear axle housings at a rate of 250 pieces an hour. The machine is adaptable to any production part requiring short linear welds.

Two welding heads are mounted at 45-degree angles on separate slides to permit reaching the inside of the banjo section. The slides move horizontally during welding. Both slides are driven by a common lead screw which contains left and right-hand threads.

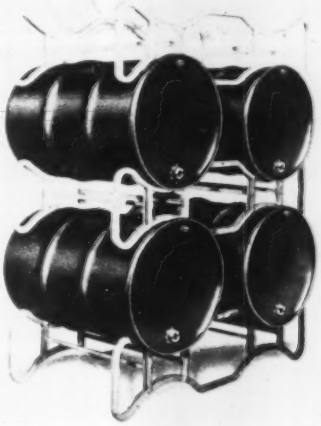


A welding wire with a tubular cross section is used. Flux is inside the wire.

Welding current is supplied by two 600-ampere generators. *Write*: Expert Welding Machine Co., 17144 Mt. Elliott Ave., Detroit 12, Mich. *Phone*: Twinbrook 1-4327

Rack Holds Barrels

This steel rack permits handling and stacking of barrels and drums with standard fork lift trucks. The drum rack supports two loaded barrels and makes easy the stacking of pairs of containers to any practical height.



Racks can be lifted from the front, back, or either side. *Write*: Pressed Steel Div., Republic Steel Corp., 6100 Truscon Ave., Cleveland, Ohio. *Phone*: Michigan 1-0810

Fork Lift Truck

Model FFEH-40 is an electrical lift truck with a capacity of 4000 lb at a 24-in. load center.

A mast height of 83 in. enables the truck to lift 130 in. A 68-in. mast makes possible a 100-in. lift.

For right-angle stacking, the truck requires only 81¼ in. plus the load length.

Travel speeds are 6.7 mph light and 5.75 mph loaded. The truck tilts 8 degrees forward, 5 degrees backward.

Lifting speed is 45 fpm with no load, 27 fpm loaded (based on a 32-volt power supply). *Write*:

Automatic Transportation Co., division of Yale & Towne Mfg. Co., 149 W. 87th St., Chicago 20, Ill. *Phone*: Radcliffe 3-7000

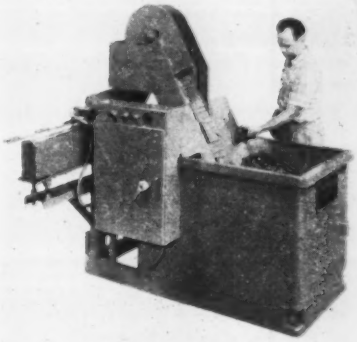
Heat Exchangers

The Karbate line of impervious graphite shell and tube heat exchangers comes in sizes from 6 to 45 in. in diameter. The units contain from 9 to 685 impervious graphite tubes (⅞ in. ID).

Standard tube lengths are 6, 9, 12, 14, and 16 ft. From 17.7 to 3585 sq ft of heat transfer surface on the outside of the tubes can be provided. *Write*: National Carbon Co., division of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y. *Phone*: Murray Hill 7-8000

Storage Feeders

Models in this line of orienting feeders have capacities of 5, 10, and 20 cu ft. They will store, elevate, orient, and feed parts from ⅛ x ⅛ x ¼ in. to 3 x 6 x 10 in.



Irregularly stamped, machined, and cast parts are handled. Production rates range up to 300 pieces a minute. *Write*: Campbell Machines Co., 18634 Fitzpatrick, Detroit 28, Mich. *Phone*: Broadway 3-8366

NEW literature

Write directly to the company for a copy

Milling Machines

Catalog 1162, 24 pages, describes a line of machines for nonferrous milling. Onsrud Machine Works Inc., 7720 N. Lehigh Ave., Niles 31, Ill.

Thin Titanium Strip

Physical and chemical characteristics of titanium rolled as thin as 0.0005 in. to tolerances as close as ±0.0001 in. are presented in this data sheet. 'American Silver Co., 36-07 Prince St., Flushing 54, N. Y.

Cylinders

Design information on air and hydraulic cylinders with bores of 1 to 16 in. is presented in this 12-page bulletin. Petch Mfg. Co., 463 York St., Detroit, Mich.

Flexible Couplings

Bulletin 2775, 12 pages, details application and selection data for couplings with maximum bores ranging up to 7 in. and ratings from 2½ to 572 hp per 100 rpm. Dept. PR, Link-Belt Co., Prudential Plaza, Chicago 1, Ill.

Dies and Nibs

Bulletin FDM-57, 12 pages, covers square and hexagon drawing dies; round wire, bar, and tube drawing dies; rough mandrel nibs; rough cored heading die nibs; nail and tack tooling inserts; barbing laps; straight and button head perforators; wire puller jaw inserts; and die finishing equipment. Firth Sterling Inc., 3113 Forbes St., Pittsburgh 30, Pa.

Hard-Facing Alloys

Chemical composition, properties, uses, and application procedures of alloys available as bare rods, crushed particles, and powder are covered in an 8-page bulletin. Literature Distribution Section, Haynes Stellite Co., division of Union Carbide Corp., 30-20 Thompson Ave., Long Island City 1, N. Y.

Copying Equipment

The xerographic copying process and the equipment it requires are described in an 8-page bulletin, X275. Haloid Co., Rochester 3, N. Y.

Air-Cooled Engines

This 28-page bulletin describes models and uses of a line of four-cycle engines. Kohler Co., Kohler, Wis.

Titanium Anodizing Racks

This 4-page bulletin describes a kit that allows aluminum and titanium racks to be compared. Service Screw Products Co., 131-C N. Green St., Chicago 7, Ill.

Turning Rolls

Tank turning rolls, pipe rolls, and rail cars for positioning cylindrical vessels for automatic welding of vessels weighing up to 600 tons are described in Bulletin TR57, 12 pages. Aronson Machine Co., Arcade, N. Y.

Stainless Steel

Properties of an austenitic stainless made without nickel are described in this 12-page bulletin. U. S. Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.

Heat Treating

Catalog TD2-620(1), 20 pages, describes the effect of steam atmosphere heat treating on high speed tool steel, cast iron, powdered iron, structural steel, brasses and bronzes, aluminum, and beryllium copper. Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia 44, Pa.

Stainless Fasteners

This 52-page stock list and data book includes illustrations, thread and design specifications, and available alloys of 40 basic fastening devices. Engineering data cover the composition, properties, applications, and weights of stainless steels. Allmetal Screw Products Co. Inc., 821 Stewart Ave., Garden City, N. Y.

Walkie Trucks

Bulletin 34-H, 4 pages, describes a control for electric walkie trucks that offers dynamic braking and controlled plugging. Dept. R-13, Lewis-Shepard Products Inc., 125 Walnut St., Watertown, Mass.

Production Control

Equipment for measurement and control, monitoring systems, sorting and classifying equipment, and production handling systems are described in an 8-page bulletin, E-157. Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus 12, Ohio.

Barrel Burnishing Compound

Bulletin B-6644, 2 pages, describes a compound which improves the brightness of work. Oakite Products Inc., 134E Rector St., New York 6, N. Y.

Hardness Tester

This 4-page bulletin describes testers that make both regular and superficial Rockwell tests. Torsion Balance Co., Clifton, N. J.

Induction Heating

Bulletin 12B8513, 4 pages, describes high frequency motor-generator induction heating equipment for brazing, annealing, deep hardening, forging, and melting. Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

Test Gages

Bulletin M-28, 4 pages, describes gages that permit readings up to 15,000 lb over 360 degrees calibration. Martin-Decker Corp., 3431 Cherry Ave., Long Beach 7, Calif.

Vertical Milling Machines

This 12-page bulletin describes 1 and 2-hp vertical mills. Famco Machine Co., 3100 Sheridan Rd., Kenosha, Wis.

Ball Bearings

Miniature ball bearings, from 1/10 to 3/8 in. OD, their types, and functions are covered in this 24-page bulletin. Miniature Precision Bearings Inc., Keene, N. H.

Centrifugal Castings

Bulletin 200, 12 pages, describes properties of castings made in 70 different alloys, including stainless steels, plain carbon and low alloy steels, Monels, cupronickels, and copper-base alloys. Sandusky Foundry & Machine Co., Sandusky, Ohio.

Vacuum Impregnation

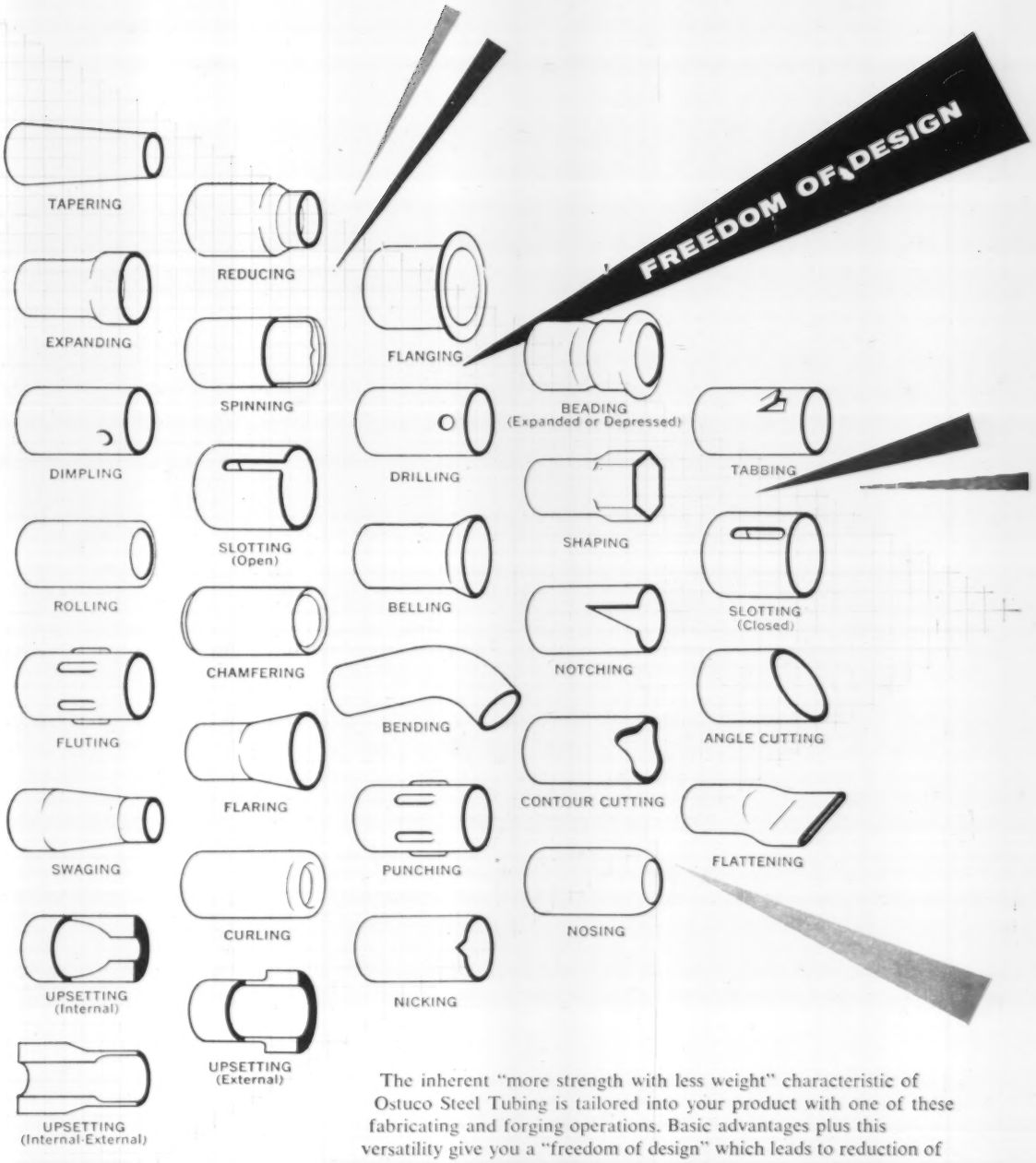
Properties, uses, and production methods for a copolymer impregnating material are covered in this 6-page bulletin. Western Sealant Co., 9999 W. Jefferson Blvd., Culver City, Calif.

Payroll Accounting

This 50-page booklet, U921, tells how the Univac 120 (punched card) electronic computer calculates the labor cost for each job and each worker's total pay for the day. Remington Rand Univac Div., Sperry Rand Corp., 315 Fourth Ave., New York 10, N. Y.

Wire Drawing

Bulletin 945-W, 4 pages, describes upright cone machines for high speed, continuous drawing of nonferrous wire in intermediate sizes. Another 4-page bulletin, 795-W-2, describes machines for pointing wire and rod before it is drawn through a die. Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.



The inherent "more strength with less weight" characteristic of Ostuco Steel Tubing is tailored into your product with one of these fabricating and forging operations. Basic advantages plus this versatility give you a "freedom of design" which leads to reduction of materials, production and labor costs and improvement of your product.

Contact your nearest Ohio Seamless sales office or write direct for full information on Ostuco Seamless or Electric-Resistance Welded Steel Tubing, new NP-60 Steel Tubing (specially processed for machinability), and fabricating and forging facilities available to you.

See Our Display in Booth No. 526 at the METAL SHOW

OSTUCO TUBING

MANUFACTURED IN

SHELBY, OHIO

EXCLUSIVELY BY

OHIO SEAMLESS TUBE DIVISION

OF COPPERWELD STEEL COMPANY

SHELBY, OHIO • Birthplace of the Seamless Steel Tube Industry in America

SEAMLESS AND ELECTRIC-RESISTANCE WELDED STEEL TUBING • FABRICATING • FORGING

SALES OFFICES: *Birmingham • Charlotte • Chicago (Oak Park) Cleveland • Dayton • Denver • Detroit (Ferndale) • Houston Los Angeles (Lynwood) • Moline • New York • North Kansas City • Philadelphia (Wynnewood) • Pittsburgh • Richmond Rochester • Salt Lake City • Seattle • St. Louis • St. Paul St. Petersburg • Tulsa • Wichita*

CANADA: *Railway & Power Engr. Corp., Ltd.*

EXPORT: *COPPERWELD STEEL INTERNATIONAL COMPANY, 225 Broadway, New York 7, New York*

J&L

RESTRICTED SPECIFICATION COLD ROLLED STRIP STEEL

for Spring Steel Requirements such as these . . .

FORMED PARTS FOR HEAT TREATMENT

SIZE	8 x .036
ANALYSIS	1050
FINISH	Bright
HARDNESS	Rockwell B-78 Max.
THICKNESS TOLERANCE	± .0003 incl. crown
WIDTH TOLERANCE	± .005
MICROSTRUCTURE	Uniform spheroids
COIL SIZE	18" I.D. coils large as possible
PACKAGING	On skids — shrouded

FLAT PARTS FOR HIGH STRENGTH WITHOUT HEAT TREATMENT

SIZE	10 x .020
ANALYSIS	1075
FINISH	Bright
HARDNESS	Rockwell C-30 Min.
THICKNESS TOLERANCE	± .001 incl. crown
WIDTH TOLERANCE	± .005
MICROSTRUCTURE	Small - fine carbides
COIL SIZE	16" — I.D. Max. coil wt. 1000#
PACKAGING	On skids — shrouded

Knowing exactly what you require for most efficient fabrication and most effective product performance, J&L can set up and consistently meet restricted specifications to match your most exacting demands. Often production operations can be greatly simplified or even eliminated; in most instances end-product and/or assembly costs can be reduced and quite frequently, product quality improved.

We would welcome an opportunity to explore with you the possibilities of J&L Restricted Specifications applied to your strip steel requirements.

THE **4** IN **1** SOURCE FOR YOUR

COLD ROLLED STRIP STEEL

Now there are four J&L plants with facilities for production of "Restricted Specification" cold rolled strip. Strategic locations at Youngstown, Indianapolis, Los Angeles and Kenilworth, N. J., provide the security of 4 sources of supply plus the close working relationship which these local production centers make possible.

SIZE	14 x .040
ANALYSIS	1095
FINISH	Bright
HARDNESS	95 to 105 Rockwell B suitable for blanking
THICKNESS TOLERANCE	± .0005 incl. crown
WIDTH TOLERANCE	± .005
MICROSTRUCTURE	Uniform medium size spheroids
COIL SIZE	16" — I.D. Max. coil wt. 600#
PACKAGING	On skids — shrouded

J&L STEEL

Jones & Laughlin
STEEL CORPORATION
STRIP STEEL DIVISION
GENERAL OFFICES: YOUNGSTOWN 1, OHIO
PLANTS: YOUNGSTOWN • INDIANAPOLIS • LOS ANGELES • KENILWORTH, NEW JERSEY
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FORMERLY THE COLD METAL PRODUCTS COMPANY

Market Outlook

IT'S beginning to look like steel demand will stay close to its present easy pace the rest of the year.

There's no big push apparent in industrial activity that would require a pickup in steel consumption.

RECORD CONSUMPTION—Use of steel is setting a record this year (see Page 113), but consumers are living off their inventories to some extent. Despite the record, the rate of consumption now is not as high as it was earlier in the year. (It's higher, though, than it was a year ago.) The reduced rate of usage makes inventories last longer. Another factor: Inventories had been built up to a higher level in the first half than most people realized. There was a lot of steel to be used—at a reduced rate of usage.

FREEDOM—With mills able to make prompt delivery on all forms of steel, except heavy plates and structural shapes (and they're getting easier), the need to carry large inventories is eliminated.

As long as inventory reduction is underway, there will be apathy in buying.

QUICK DELIVERY—Automotive demand had been looked to as something to spark steel buying, but orders are still light. Buyers are specifying the day they want delivery, and their requests are being honored. In most cases, long leadtimes have vanished. (Leadtime is the number of days or weeks that an order must be placed before the delivery date.) One steel producer is shipping alloy bars within three days from the receipt of an order. Not long ago the leadtime was 45 days. Another steel company will deliver 2000 tons of cold-rolled carbon sheets in coil form 17 days after receiving the order.

Although demand is not rushing, it is keeping ingot production steady. In the week ended Oct. 20, production for ingots and castings was unchanged at 81 per cent of capacity.

STEADY—Ingot output has been hovering around 80 per cent since early July. The rate will prevent October from being one of the year's high months. Historically, October is looked upon as one of the two best months of a year.

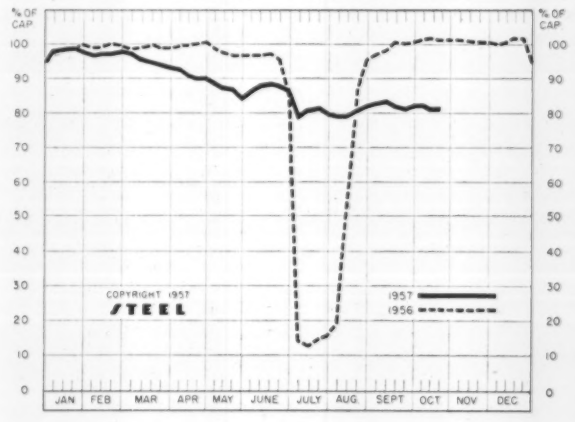
While the auto industry is not rolling along as fast as some people had expected, the farm equipment industry is doing better. It is not a big consumer of steel, but it is hanging on to its recent gains.

JOINER—The oil and gas industry has joined the ranks of inventory reducers. Result: Pressure for oil country tubular goods is down some.

Structural shapes and plates also continue to ease. Fabricating shops are shipping more tonnage than they are booking. So competition among fabricators is keener.

SCRAP LOWER—The probable absence of an upturn in steel production this year continues to force down the prices of scrap. In the week ended Oct. 16, STEEL's price composite on steelmaking grades declined $1.67. It is now at $37.83 a gross ton, its lowest point since July, 1955. Little scrap is being bought by the mills. Most of the activity involves the filling of outstanding orders by brokers.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

	Week Ended Oct. 20	Change	Same 1956	Week 1955
Pittsburgh	81.5	— 2.5*	100	102
Chicago	84.5	— 1.5*	101	97
Mid-Atlantic	82.5	— 2	101	96.5
Youngstown	67	— 3	101	100
Wheeling	76	— 6	102.5	99
Cleveland	89.5	+ 3*	104	101.5
Buffalo	97.5	— 2.5	107.5	105
Birmingham	73.5	+ 3	95.5	97.5
New England	52	— 2	85	90
Cincinnati	84	+ 6.5*	93	86.5
St. Louis	94.5	+12	103	106
Detroit	100.5	— 1.5*	101	98
Western	92	— 2	104	102
National Rate	81	0	101.5	97

INGOT PRODUCTION‡

	Week Ended Oct. 20	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	130.2†	131.0	130.8	155.3
NET TONS (In thousands)	2,092†	2,105	2,101	2,495

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,559,490 in 1957; 2,461,893 in 1956; 2,413,278 in 1955.

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REG. U. S. PAT. OFFICE

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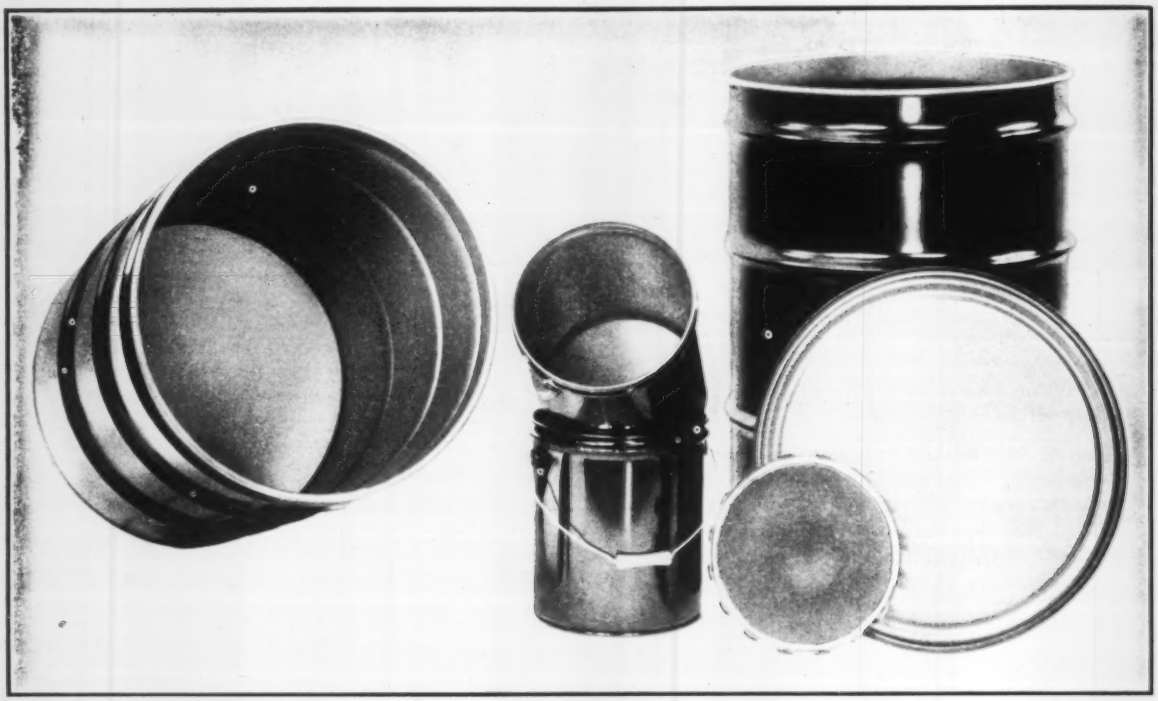

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MILL SHIPMENTS
84
million net tons
1 million net tons from inventories
Finished Steel Consumption reaches 85 million net tons as inventories supplement mill shipments

Use of Steel Setting Record in '57

WHEN the year's figures are totaled, consumption of finished steel will set a record.

Not only that: The figure will be 1 per cent larger than this year's mill shipments and 7 per cent above last year's consumption.

Consumption will approximate 85 million net tons. Mill shipments will be around 84 million net tons. The difference—1 million tons, or about four days' supply at the current rate of usage—is steel that will come out of inventories. Last year, consumption was 79 million net tons.

Surprise—But the net reduction of inventory is smaller than many people thought it would be. What they didn't realize was that inventories were still being built in the early part of the year. They were increased around 2 million tons in the first half, but the additions were largely involuntary—a condition that is characteristic of the top of an inventory cycle. The steel was on order and in the "pipelines" of distribution when the cycle topped out.

Steel inventories were larger at the start of the year than most people suspected. They came to around 20 million tons, after a 4-million-ton addition in 1956. In the first half, they rose to 22 million tons.

Shapes of Things—Not all the 22 million tons was unused finished steel. Some was in the form of goods in process and finished goods which had not been sold. It was still steel in inventory. Only its form had been changed. It included all the tonnage on the steel companies' shipping docks, finished products of the end item manufacturer, even automobiles which were just rolling off the assembly line.

A Start—Most of the progress in inventory reduction this year is in the area of raw materials. In the durable goods industry, goods in process and finished goods have been rising in volume. U. S. Department of Commerce figures show that $8.6 billion worth of purchased materials were on hand in January, versus $8.5 billion in August. In contrast, $12.9 billion worth of goods were in process in January, $13.2 billion in August, and $9.3 billion worth of finished goods were in inventory in January, $9.5 billion in August.

As long as metalworking plants know they can get steel promptly, they are inclined to reduce inventories and keep them small. The practice applies to inventories in any form—raw materials, goods in process, and finished goods. Just as inventory building often results in overaccumulation, inventory reduction usually develops into an overliquidation. Efforts in either direction are overdone.

New Experience—With only a few exceptions, steel is available for prompt delivery, and it is likely to remain so for some time. The steel industry is making a substantial expansion in its capacity in readiness for the big demand expected in the 1960s. Much of this expansion has been achieved. The addition of 7.6 million net tons (STEEL, Sept. 16, p. 79) this year will boost ingot capacity to a record 141 million tons by Jan. 1, 1958. Finishing facilities are being expanded to move them up into balance with the increased ingot capacity.

Reduced purchases of steel this

year prompted a reduction in the ingot production rate. Some people got the impression that steel consumption had fallen as much. During the summer, consumption did ease off a little from record monthly levels prevailing around the turn of the year, but usage was still surpassing year-ago levels. Proof is found in the Federal Reserve Board's index of metal fabricating. The index (without seasonal adjustment) soared into the 180s (1947-49=100) in October of last year and remained in that area through March of this year. The record was registered in February with 185. Despite an easing, the level in August of this year was 174, compared with 167 in the corresponding month of last year.

Excessive Swing—It's not uncommon for the steel ingot production rate to swing more sharply than consumption. When demand tends to exceed supply, people buy for current consumption and for inventories. When steel supply tends to exceed demand, consumers are inclined to live off their inventories. It not only erases buying for inventory but also buying for current consumption.

Downward adjustment of steel inventories has been of the "rolling" type. Not all forms of finished steel were affected at the same time. Among the first to soften was wire; next came the light flat-rolled products such as sheets and strip; now the heavyweights like structural shapes and plate mill plates are beginning to feel the influence.

Continued Adjustment—The net reduction of 1 million tons in steel inventories in 1957 will leave a 19-million-ton stock at the end of the year—an amount equal to three months' usage at current rates. Some analysts say this is still high and that they expect the inventory reduction to continue in the first and second quarters of 1958.

The reduction in the light, flat-rolled products has been going on for a year; so it's possible that demand for them will revive in '58. It might be a year in which the light, flat-rolled products will be up and the heavy products down—the reverse of the 1957 situation.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.*

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Steel Bars . . .

Bar Prices, Page 123

Slight improvement in sales of commercial bars, carbon and alloy, is reported, but volume continues disappointing. Market sentiment is buoyed by expectations of substantial placements on automotive account soon.

Fairly sharp gains in alloy sales at Pittsburgh overshadow a modest pickup in auto requirements for hot-rolled carbon bars. A major producer says demand for disc and plow blades this quarter is well above that in third quarter. The improvement is seasonal, and is following the pattern of demand that has been in evidence in recent years.

Defense needs are off in some directions, but the Boston Navy Yard requires 430 tons of alloy bars (8632 grade, hot-rolled, 4¾-

in. in diameter) for forged die link chain.

A producer of hot-rolled bars at Pittsburgh notes a slight gain in auto orders. But buying by other classes of consumers still is slowing down. As a result, October volume will not be much above that in September. At the same time, forward bookings are limited, November orders still dragging.

In more cases, converters' inventories of hot-rolled bars are smaller, but these mills are not placing new hot-rolled tonnage due to slack demand for cold-drawn bars. Inventories of the latter are being liquidated slowly.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 123

Reinforcing steel demand continues to reflect the seasonal decline in building and construction requirements. Shipments are reported keeping pace with demand, so order backlogs are shrinking. Mills in the Pacific Northwest, for example, are tailoring their operations to the slower demand.

Bids are in to Washington state for the Hood Canal floating bridge involving 6300 tons of reinforcing bars. Considerable highway bar tonnage is pending in Washington state and Oregon. A major district reinforced concrete job will be the Seattle library, bids on which will be called next March.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 124 & 125

Although substantial, and reasonably satisfactory for some suppliers, automotive sheet requirements are not developing in the volume needed to spark the hoped-for autumn sales upturn.

Some mills are lowering their sights for first quarter (1958) activity. They say only a booming demand for new model automobiles can brighten the sheet market picture.

Yet consumption of sheets is said to be outrunning new orders. Consumers, assured of prompt mill shipments, are relying on inventories to a greater extent than usual. As a result, a sudden pickup in demand, notably for cold-rolled sheets, would catch some users with relatively short supplies.

Buying is fairly substantial at

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some market centers, but orders lack depth, and the mills are unable to add materially to their backlogs. Forward bookings are disappointing. At best, October volume is only fair. At some points it is under September and August figures. There are open spaces in October schedules, and November and December order books are not filling rapidly. Expectations are November bookings will do no better than equal those for October.

The mills can give hot-rolled shipments in two to three weeks. Cold-rolled business, notably on auto account, is a little heavier, but still leaves much to be desired. Appliance requirements also continue to lag with production off about 25 per cent. Galvanized sheets are moving sluggishly. Cold rolled carbon and alloy strip are in slightly heavier demand, though not enough to extend mill deliveries.

Tubular Goods . . .

Tubular Goods Prices, Page 127

With distributors' inventories substantial, steel pipe is moving at a slower pace in New England. Some sellers' stocks of seamless pipe now are said to extend up to five months.

Direct shipment orders are light, and some utilities are turning back tonnage in the 6 and 8 in. sizes. The orders were placed in the first half. Some gas companies are placing orders for 1958, but there is no buying beyond known needs.

Buttweld pipe can be shipped in one week. Orders are small. Most sizes of seamless are available for shipment in 30 days. Mechanical and pressure tubing demands are slow, but deliveries are irregular due to spotty mill operations. Electric welded steel pipe shipments extend three to four weeks.

Oil country tubemakers expect to operate at capacity during the fourth quarter, but some oil country items are experiencing falling demand. An example is drill collars and sucker rods. One maker says orders for those items are off 50 per cent from the year-ago pace. In contrast, export sales of all tubular products are strong.

Shell Pipe Line Corp. plans a 100-mile, 16 or 20-in., common crude pipeline in the Mississippi River delta area which will ter-

minate at the company's refinery 18 miles west of New Orleans.

Orders involving 2100 tons of cast iron pipe have been placed for two Seattle projects. The tonnage went to the U. S. Pipe & Foundry Co. Bids have been called on 300 tons of cast pipe Oct. 21 by Bellingham, Wash.

Warehouse . . .

Warehouse Prices, Page 128

After experiencing renewed buying interest for some flat-rolled products in late September and early October, distributors report a leveling off in business. A flurry of sheet bookings and some gain in plate sales had been recorded following improvement in warehouse stocks of those products. Now, sheet demand is dull.

Distributors can give prompt delivery on almost all products with the possible exception of wide flange sections and heavy plates. Otherwise, their inventories of formerly hard-to-get items are well rounded.

Plates . . .

Plate Prices, Page 123

Heavy sheared plates are in strong demand, but market pressure is easing. Forward buying is noticeably slower. Universal and strip mill plates are in relatively easy supply, partly because of declining railroad requirements.

Except for heavy plates, construction firms anticipate no difficulty filling fourth quarter requirements at Pittsburgh. Warehouses there have rounded out their inventories in most sizes, and, recently, some extra mill tonnage has come out due to declining railroad needs.

Demand for clad plates, heads, and flanged specialties is less active than it was. Requirements for alloy plates for pressure vessels and for defense account are fair. The same is true of heavy electrical equipment needs. Inquiries from Canada and Mexico are being received by Midwest sellers.

The largest unplaced job in the Pacific Northwest involves 1500 tons of plates for two Washington State ferries. Bids were opened at Olympia, Wash., Oct. 15. Two jobs in Oregon, involving 1000 tons, also are pending. Small fabricators in the area are seeking

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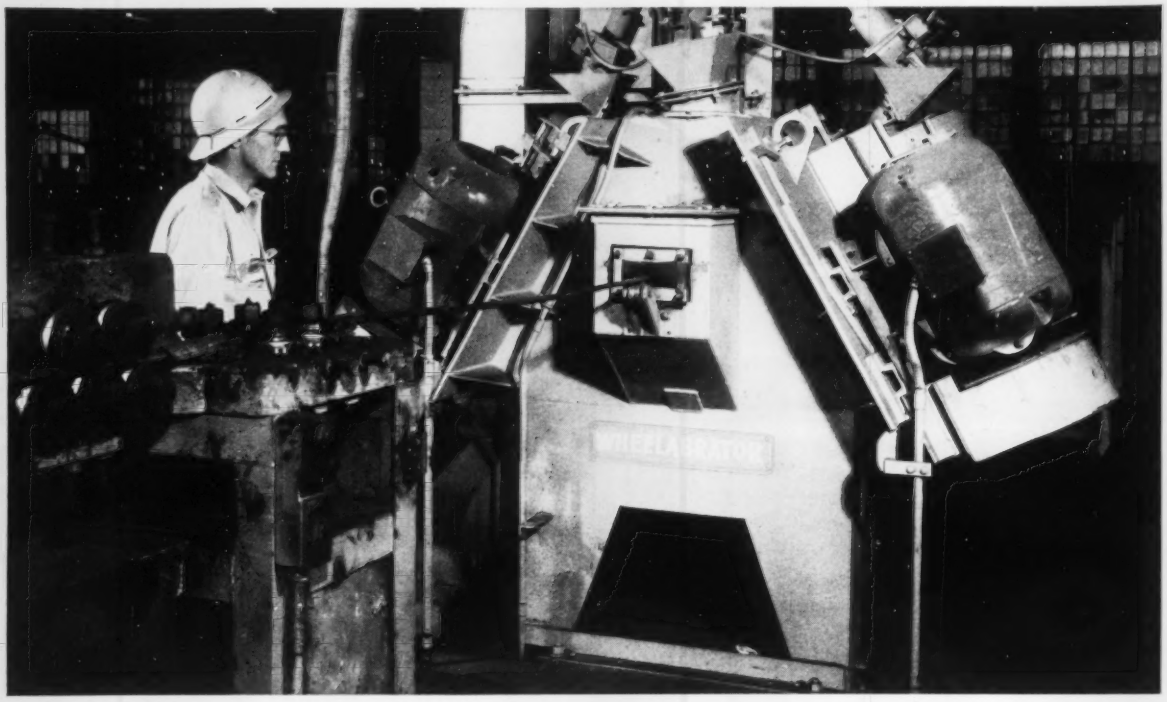

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new business with their order backlogs shrinking.

Recent elimination of the premium price by Lukens Steel Co., Coatesville, Pa., makes the delivered price on carbon plates, Boston, $6 a ton under the delivered price from Pittsburgh, and $2 under that from Sparrows Point, Md. Pittsburgh mills are not equalizing on freight. Users are increasingly reluctant to pay premium prices, or high freight charges.

Steel Output Record Set

Record production of 87,721,169 net tons of steel the first nine months this year is reported by American Iron & Steel Institute. It is nearly 5 million tons above the figure for the same period last year, over 1.9 million tons better than the previous record— 85,784,-118 tons in 1955.

September output was reported at 8,995,000 net tons, versus 9,233,-890 tons in August and 10,422,659 poured in September, 1956.

Output for the third quarter was 27,137,622 tons, against 20,167,491 in the comparable period last year when a strike curtailed production.

In producing the record nine-month tonnage, the furnaces this year operated at an average of 87.9 per cent of their Jan. 1 capacity of 133,459,150 net tons annually. Operations averaged 82 per cent in September, and 81.5 per cent in August. The third quarter average was 80.7 per cent, against 87.2 during second quarter.

The index of steel production (1947-49 equals 100) during the first nine months this year was 140.0, compared with 131.6 in the same period last year. The Sepbember 1957, index was 130.7.

Structural Shapes . . .

Structural Shape Prices, Page 123

Structural steel requirements are declining seasonally. Signs: Fabricators' shrinking backlogs and increasing competition on new jobs. Competition in the East is the sharpest in months.

Fabricating shops are actively engaged, and steel supply, principally wide flange sections, still falls short of over-all requirements. But pressure for wide flange beams is a little easier, and producers are beginning to make headway against carryovers. There is a possibility they may be caught up on arrearages by year-end.

Requirements for standard shapes are off, though producers say consumption is well above current demand, with consumers trimming inventories. Fabricating shops, however, are shipping more tonnage than they are booking, with the result deliveries are steadily improving. Both price and delivery are increasingly important factors in the placement of fabricated structural steel orders.

A relatively large volume of construction, notably schools, is being figured in the East. These jobs call for lighter structural shapes. There also is some estimating on industrial plants in the area. Less bridge tonnage is being figured, though, except in New York State. Bids on a 5000-ton suspension bridge at Ogdensburg, N. Y., scheduled to close Oct. 10, were postponed to Nov. 7.

Pig Iron . . .

Pig Iron Prices, Page 128

Merchant pig iron demand is spotty, reflecting the irregular tempo of foundry business generally. Castingmakers serving the automotive industry report continued slow business, but makers of cast pipe and castings for heating equipment are fairly busy.

Gray iron foundries are operating only three or four days a week at some points. Their order backlogs are short.

Production of iron is tending downward. At Buffalo, output has declined for the first time in months. Republic Steel is taking off one furnace there for a relining job. Other district producers' blast furnace operations are unchanged.

Iron Ore . . .

Iron Ore Prices, Page 129

Iron ore shipments from the upper lakes totaled 2,570,863 gross tons in the week ended Oct. 14, reports the American Iron Ore Association. Shipments in the same week a year ago were 3,465,165 tons.

Cumulative shipments in the 1957 shipping season to Oct. 14 were 74,638,920 tons, against 60,-522,519 in the like 1956 period.

Of the 251 American Great Lakes iron ore vessels, 235, or 93.43 per cent, were in commission at mid-October, compared with 239 vessels, 95.22 per cent, a month earlier. A year ago, the fleet was 100 per cent engaged.

Steel Ingot Production—September, 1957

Period	— OPEN HEARTH — Net tons	Per cent of capacity	——BESSEMER—— Net tons	Per cent of capacity	——ELECTRIC—— Net tons	Per cent of capacity	——TOTAL—— Net tons	Per cent of capacity
1957								
January ..	9,829,691	99.0	294,839	77.1	884,232	86.5	11,008,762	97.1
February .	8,898,671	99.2	277,682	80.4	810,853	87.8	9,987,206	97.6
March	9,442,164	95.1	275,156	71.9	871,754	85.2	10,589,074	93.4
1st Qtr. ..	28,170,526	97.7	847,677	76.3	2,566,839	86.4	31,585,042	96.0
April	8,820,328	91.8	231,731	62.6	762,721	77.1	9,814,780	89.5
May	8,842,707	89.1	201,864	52.8	747,752	73.1	9,792,323	86.4
June	8,498,903	88.4	210,915	57.0	681,584	68.9	9,391,402	85.6
2nd Qtr. ..	26,161,938	89.8	644,510	57.4	2,192,057	73.0	28,998,505	87.2
1st 6 Mo..	54,332,464	93.7	1,492,187	66.8	4,758,896	79.7	60,583,547	91.5
July	8,086,519	81.4	194,638	50.9	627,575	61.4	8,908,732	78.6
*August ..	8,297,172	83.6	204,723	53.5	731,995	71.6	9,233,890	81.5
†September.	8,153,000	84.8	186,000	50.2	656,000	66.3	8,995,000	82.0
†3rd Qtr. .	24,536,691	83.3	585,361	51.6	2,015,570	66.4	27,137,622	80.7
†9 Mo. ..	78,869,155	90.2	2,077,548	61.7	6,774,466	75.2	87,721,169	87.9
1956								
January ..	9,676,151	101.4	323,235	79.5	828,845	86.7	10,828,231	99.3
February ..	9,043,064	101.3	296,543	78.0	799,388	87.1	10,118,995	99.2
March	9,795,263	102.7	310,060	76.3	819,465	85.7	10,924,788	100.2
1st Qtr. ...	28,514,478	101.8	929,838	77.9	2,427,698	86.5	31,872,014	99.6
April	9,437,945	102.2	306,388	77.9	779,452	84.2	10,523,785	99.7
May	9,370,167	98.2	297,990	73.3	822,219	86.0	10,490,376	96.2
June	8,664,605	93.9	282,846	71.9	773,546	83.6	9,720,997	92.1
2nd Qtr. ..	27,472,717	98.1	887,224	74.3	2,375,217	84.6	30,735,158	96.0
1st 6 Mo. .	55,987,195	100.0	1,817,062	76.1	4,802,915	85.6	62,607,172	97.8
July	1,330,151	13.9	.....	.....	292,012	30.5	1,622,163	14.9
August ...	7,213,274	75.6	189,564	46.6	719,759	75.3	8,122,597	74.5
September..	9,342,796	101.2	286,978	72.9	792,885	85.7	10,422,659	98.8
3rd Qtr. ..	17,886,221	63.2	476,542	39.5	1,804,656	63.6	20,167,419	62.3
9 Mo.	73,873,416	87.6	2,293,604	63.8	6,607,571	78.2	82,774,591	85.9
October ...	9,841,002	103.2	330,101	81.2	877,410	91.8	11,048,513	101.3
November .	9,430,248	102.2	295,827	75.2	829,425	89.6	10,555,500	100.0
December .	9,695,919	101.6	308,465	75.9	833,161	87.1	10,837,545	99.4
4th Qtr. ..	28,967,169	102.3	934,393	77.4	2,539,996	89.5	32,441,558	100.3
2nd 6 Mo..	46,853,390	82.8	1,410,935	58.5	4,344,652	76.5	52,608,977	81.3
Total 1956	102,840,585	91.6	3,227,997	67.4	9,147,567	81.2	115,216,149	89.8

Note—The percentages of capacity operated in 1957 are calculated on Jan. 1, 1957, annual capacities of: Open hearth, 116,912,410 net tons; bessemer, 4,505,000 net tons; electric, 12,041,740 net tons; total, 133,459,150 net tons. The percentages of capacity operated in 1956 are calculated on Jan. 1, 1956, annual capacities of: Open hearth, 112,317,040 net tons; bessemer, 4,787,000 net tons; electric, 11,259,050 net tons; total, 128,363,090 net tons.
*Revised. †Preliminary figures, subject to revision.

Finished Steel Shipments—August, 1957

(All grades, net tons)

Products	Carbon	Alloy	Stainless	First Ten Months 1957	1956
Ingots, etc.	26,869	15,279	1,190	343,063	460,380
Blooms, slabs, etc.	121,697	31,495	1,378	1,804,362	1,486,015
Tube rounds	1,518	256	.....	51,832	10,602
Skelp	6,710	.....	.....	106,395	113,324
Wire rods	64,809	900	347	663,429	694,873
Structurals (heavy)	580,264	6,009	5	4,610,929	3,261,836
Steel piling	49,459	.....	.....	401,604	246,435
Plates	687,939	41,427	2,692	6,608,792	4,790,751
Rails (standard)	86,622	.....	.....	934,741	724,690
Rails (all other)	6,575	.....	.....	60,976	66,792
Joint bars	6,242	.....	.....	66,406	56,508
Tie plates	19,108	.....	.....	204,957	203,648
Track spikes	4,836	.....	.....	59,626	70,604
Wheels	31,983	37	.....	257,773	225,774
Axles	18,716	17	.....	142,990	108,132
Bars (hot rolled)	453,167	112,453	3,350	5,403,192	5,628,231
Bars (reinforcing)	188,450	7	.....	1,694,542	1,544,621
Bars (cold drawn)	78,237	15,353	3,871	928,929	1,191,620
Tool steel	983	6,496	.....	69,596	87,089
Standard pipe	219,254	54	1	1,933,750	1,869,074
Oil country goods	194,749	33,753	.....	2,043,122	1,684,445
Line pipe	376,311	.....	.....	2,907,666	2,150,421
Mechanical tubing	41,353	18,221	298	558,512	645,547
Pressure tubing	22,571	5,528	1,752	298,045	236,026
Drawn wire	195,679	2,852	1,840	1,816,496	1,994,390
Nails & staples	36,681	.....	.....	328,669	385,828
Barbed wire	2,959	.....	.....	49,039	60,495
Woven wire fence	6,657	.....	.....	164,530	208,838
Bale ties	3,595	.....	.....	42,640	41,817
Black plate	43,749	.....	.....	440,908	511,900
Tin plate (hot dipped)	40,542	.....	.....	541,695	646,381
Tin plate (electro)	409,515	.....	.....	3,573,610	3,188,725
Sheets (hot rolled)	530,953	17,355	1,932	5,463,746	5,614,174
Sheets (cold rolled)	888,059	2,645	9,637	7,818,636	8,744,079
Sheets (galvanized)	186,694	96	.....	1,646,064	1,928,253
Sheets (other coated)	15,290	.....	.....	132,930	159,752
Elect. sheets and strip	4,428	38,976	.....	444,604	534,907
Strip (hot rolled)	100,505	1,982	1,088	971,352	1,170,886
Strip (cold rolled)	78,596	1,783	15,174	802,566	1,073,662
Totals (1957)	5,832,324	352,974	44,555	56,392,714	.....
Totals (1956)	5,158,778	334,093	47,044	.....	53,821,525

Source: American Iron & Steel Institute.

Imported Steel delivered on Domestic Terms

No red tape! We deliver to any place in North America. Over 10 years of service to more than 2000 North American accounts—as a domestic firm, on domestic terms—with lower costs or better deliveries. Write for "How to be at home with products made abroad" and the address of your local Kurt Orban Company representative.

Prices per 100 lbs. (except where otherwise noted) landed, including customs duty, but no other taxes.

	Atlantic & Gulf Coast	West Coast	Vancouver	Montreal
Deformed Bars (⅜" Dia. incl. all extras)	$6.63	$6.86	$6.61	$6.29
Merchant Bars (¼" Round incl. all extras)	7.62	7.85	7.48	7.22
Bands (1"x⅛"x20' incl. all extras)	7.76	7.98	7.65	7.38
Angles (2"x2"x¼" incl. all extras)	6.57	6.75	6.99	6.69
Beams & Channels (base)	6.82	7.00	7.24	6.94
Furring Channels (C.R. ¾", per 1000')	26.62	27.77	....	....
Barbed Wire (per 82 lb. net reel)	6.95	7.40	7.75	7.80
Nails (bright, common, 20d and heavier)	8.38	8.58	9.07	8.99
Larssen Sheet Piling (section II, new, incl. size extra)	7.80	8.10	8.10	7.80
Wire, Manufacturer's bright, low C, (11½ga.)	7.38	7.52	8.52	8.52
Wire, galv., Fence qual.; low C (11½ ga.)	8.01	8.15	9.42	9.42
Wire, Merchant quality, bl. ann., (10 ga.)	7.60	7.75	8.78	8.78
Rope Wire (.045", 247,000 PSI, incl. extras)	13.60	13.75	13.00	13.00
Wire, fine and weaving, low C, (20 ga.)	10.66	10.80	10.17	12.17
Tie Wire, autom. baler (14½ ASWG, 97 lbs. net)	9.58	9.73	9.64	9.54
Merchant Pipe (½" galv. T & C, per 100')	8.48	8.83	....	....
Casing (5½", 15.5 J55, T & C, per 100')	189.00	194.00	....	....
Tubing (2⅞", 6.4 J55, EUE, per 100')	98.00	99.00	....	....
Forged R Turn. Bars, C-1035 (from 10" dl.)	13.50	13.73	13.50	13.24

Ask prices on: Bulb tees, bolts and nuts, manganese steel plates and shapes, welded wire reinforcing mesh and hardware cloth, boiler tubes, A-335-P11 pressure pipe.

from prominent century-old West German Mills

Through Stahlunion-Export GmbH

BOCHUMER VEREIN World's first Steel Foundry, 1842—Vacuum degassed Forgings, Pinion wire and spring wire for watches and clocks.
DORTMUNDER UNION Originators of Interlock Sheet Piling—Larssen Sheet Piling, Plate, Shapes, Forged Bars and Shafts.
NIEDERRHEIN Europe's most modern Rod Mill—OH, CH, Low Metalloid, Specialty Wire Rod, Merchant Bars.
WESTFAELISCHE UNION Europe's largest Wire Mill—All types drawn Wire and Wire Products—Nails, Barbwire, Wire Rope, Prestress Concrete Wire and Strand.
PHOENIX RHEINROHR Europe's largest Pipe Mill—Pipe, Tubing, Flanges, Welding Fittings, Precision Tubes, Tubular Masts.

Ask us to quote on your requirements.

KURT ORBAN COMPANY, INC., 46 Exchange Place, Jersey City 2, N. J.
In Canada: Kurt Orban Canada, Ltd., Vancouver, Toronto, Montreal

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

250 tons, high school, Dedham, Mass., to Waghorne-Brown (Bethlehem Fabricators Inc.), Boston; Park Construction Co., Boston, general contractor.

175 tons, Washington State girder bridge, Skagit County, to Isaacson Iron Works, Seattle; Louis Elterich Co., Port Angeles, Wash., general contractor, low at $470,536.

STRUCTURAL STEEL PENDING

1200 tons (if steel frame design), proposed exposition building, Portland, Oreg.; plans in preparation.

1000 tons, two Washington State ferries; bids in.

660 tons, addition to Exchange Bldg., Seattle; plans in preparation.

640 tons, also 47 tons of reinforcing steel, Wind River bridge, Washington State; general contract to C. M. Corkum, Portland, Oreg., low at $507,237 to Bureau of Public Roads.

500 tons, addition to Benson Hotel, Portland, Oreg.; plans in preparation.

210 tons, Washington State ferry terminals; bids in.

90 tons, steel framing for high school, Selah, Wash.; bids in.

REINFORCING BARS . . .

REINFORCING BARS PLACED

480 tons, including 80 tons of bar joists, high school, Dedham, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; Park Construction Co., Boston, general contractor.

150 tons, research building, State Hospital, Nashville, Tenn., to McCarty, Jones & Woodard, Nashville; Southern Builders Inc., Memphis, Tenn., general contractor.

115 tons, Montana state underpass, Cascade County, to unstated fabricator; Sletten Construction Co., Great Falls, Mont., general contractor.

REINFORCING BARS PENDING

410 tons, also lump sum bids for shapes, tonnage unstated, Montana State 1713-ft railroad overpass, Yellowstone County; bids to Helena, Mont., Oct. 24.

Unstated, Idaho state highway project, including seven 101-ft concrete spans, Nez Perce and Lewis counties; S. S. Mullen Inc., Seattle, low at $2,011,540.

Unstated, Oregon state highway bridge, Columbia County; Inland Construction Co., Milwaukee, low at $65,590.

Unstated, two Oregon state highway bridges, Lane County; A. H. Saxton & Sons, Portland, Oreg., low at $43,719.

PLATES . . .

PLATES PLACED

100 tons, also shapes, 299-ft bulk carrier barge for the Upper Columbia Towing Co., to Todd Shipyards Corp., Seattle.

PLATES PENDING

1500 tons, two Washington State ferries; bids in at Olympia, Wash., Oct. 15.

320 tons, hot rolled carbon, ¼ by 36 by 96, bid No. 60; Oct. 24, Raritan Arsenal, Metuchen, N. J.

PIPE . . .

CAST IRON PIPE PLACED

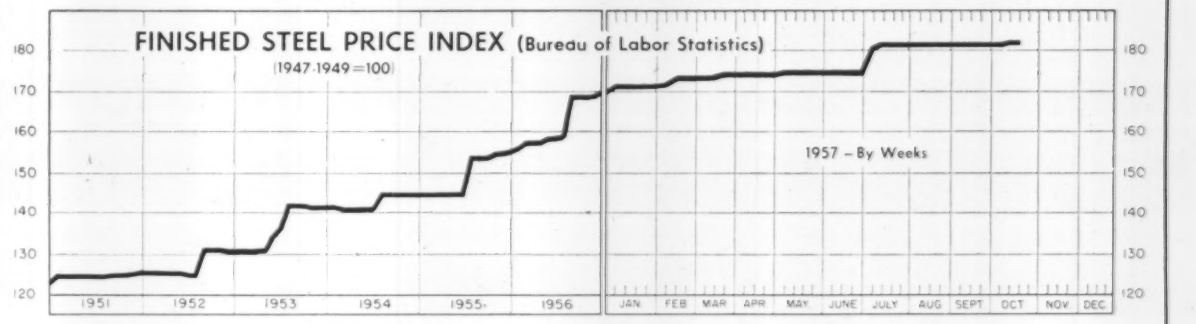
1800 tons, Nesbit Avenue Improvement District, Seattle, to U. S. Pipe & Foundry Co., Seattle; Argentieri & Colarosso, Seattle, general contractor.

300 tons, E. 125th St. improvement, Seattle, to U. S. Pipe & Foundry Co., Seattle; Thorburn & Logozo, Seattle, general contractor, low at $92,652.

CAST IRON PIPE PENDING

300 tons, 9300 ft of 14-in.; also 10,700 ft of 48, 36, and 24-in. steel pipe; bids to Alfred B. Loop, comptroller, Bellingham, Wash., Oct. 21.

Price Indexes and Composites



Oct. 15, 1957	Week Ago	Month Ago	Sept. Avg.	Year Ago
181.8	181.8	181.5	181.5	168.6

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Oct. 15

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.600
Rails, Light, 40 lb	7.067
Tie Plates	6.600
Axles, Railway	9.825
Wheels, Freight Car, 33 in. (per wheel)	60.000
Plates, Carbon	6.150
Structural Shapes	5.942
Bars, Tool Steel, Carbon (lb)	0.535
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.650
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.404
Bars, Tool Steel, H.R. Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.899
Bars, H.R., Alloy	10.525
Bars, H.R., Stainless, 303 (lb)	0.525
Bars, H.R., Carbon	6.425
Bars, Reinforcing	6.210
Bars, C.F., Carbon	10.360
Bars, C.F., Alloy	13.875
Bars, C.F., Stainless, 302 (lb)	0.553
Sheets, H.R., Carbon	6.192
Sheets, C.R., Carbon	7.089
Sheets, Galvanized	8.220
Sheets, C.R., Stainless, 302 (lb)	0.688
Sheets, Electrical	12.025
Strip, C.R., Carbon	9.243
Strip, C.R., Stainless, 430 (lb)	0.493
Strip, H.R., Carbon	6.245
Pipe, Black, Buttweld (100 ft)	19.814
Pipe, Galv., Buttweld (100 ft)	23.264
Pipe, Line (100 ft)	199.023
Casing, Oil Well, Carbon (100 ft	194.499
Casing, Oil Well, Alloy (100 ft)	304.610
Tubes, Boiler (100 ft)	49.130
Tubing, Mechanical, Carbon (100 ft)	24.953
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483
Black Plate, Canmaking Quality (95 lb base box)	7.583
Wire, Drawn, Carbon	10.225
Wire, Drawn, Stainless, 430 (lb)	0.653
Bale Ties (bundles)	7.967
Nails, Wire, 8d Common	9.828
Wire, Barbed (80-rod spool)	8.719
Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Oct. 16 1957	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	239.15	239.15	239.15	225.58	181.31
Index in cents per lb	6.479	6.479	6.479	6.111	4.912

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$146.03	$146.03	$146.19	$137.48	$110.98
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	62.63	55.04
Basic Pig Iron, GT	65.99	65.99	65.99	62.18	54.66
Malleable Pig Iron, GT	67.27	67.27	67.27	63.41	55.77
Steelmaking Scrap, GT	37.83	39.50	48.17	56.67	4300.

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point

FINISHED STEEL	Oct. 16 1957	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.425	5.425	5.425	5.075	3.95
Bars, H.R., Chicago	5.425	5.425	5.425	5.075	3.95
Bars, H.R., deld., Philadelphia	5.725	5.725	5.725	4.93	4.502
Bars, C.F., Pittsburgh	7.30*	7.30*	7.30*	6.85*	4.925
Shapes, Std., Pittsburgh	5.275	5.275	5.275	5.00	3.85
Shapes, Std., Chicago	5.275	5.275	5.275	5.00	3.85
Shapes, deld., Philadelphia	5.545	5.545	5.545	5.00	4.13
Plates, Pittsburgh	5.10	5.10	5.10	4.85	3.90
Plates, Chicago	5.10	5.10	5.10	4.85	3.90
Plates, Coatesville, Pa.	5.10	5.10	5.50	5.25	4.35
Plates, Sparrows Point, Md.	5.10	5.10	5.10	4.85	3.90
Plates, Claymont, Del.	5.70	5.70	5.70	5.35	4.35
Sheets, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.775
Sheets, H.R., Chicago	4.925	4.925	4.925	4.675	3.775
Sheets, C.R., Pittsburgh	6.05	6.05	6.05	5.75	4.575
Sheets, C.R., Chicago	6.05	6.05	6.05	5.75	4.575
Sheets, C.R., Detroit	6.05-6.15	6.05-6.15	6.05-6.15	5.75-5.85	4.775
Sheets, Galv., Pittsburgh	6.60	6.60	6.60	6.30	5.075
Strip, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.75-4.225
Strip, H.R., Chicago	4.925	4.925	4.925	4.675	3.725
Strip, C.R., Pittsburgh	7.15	7.15	7.15	6.85	5.10-5.80
Strip, C.R., Chicago	7.15	7.15	7.15	6.85	5.35
Strip, C.R., Detroit	7.25	7.25	7.25	6.95	5.30-6.05
Wire, Basic, Pittsburgh	7.65	7.65	7.65	7.20	5.10-5.225
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.20	6.20-6.35
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$9.85	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$96.00	$96.00	$96.00	$91.50	$70.50
Wire rods, 7/32-5/8" Pitts.	6.15	6.15	6.15	5.80	4.325

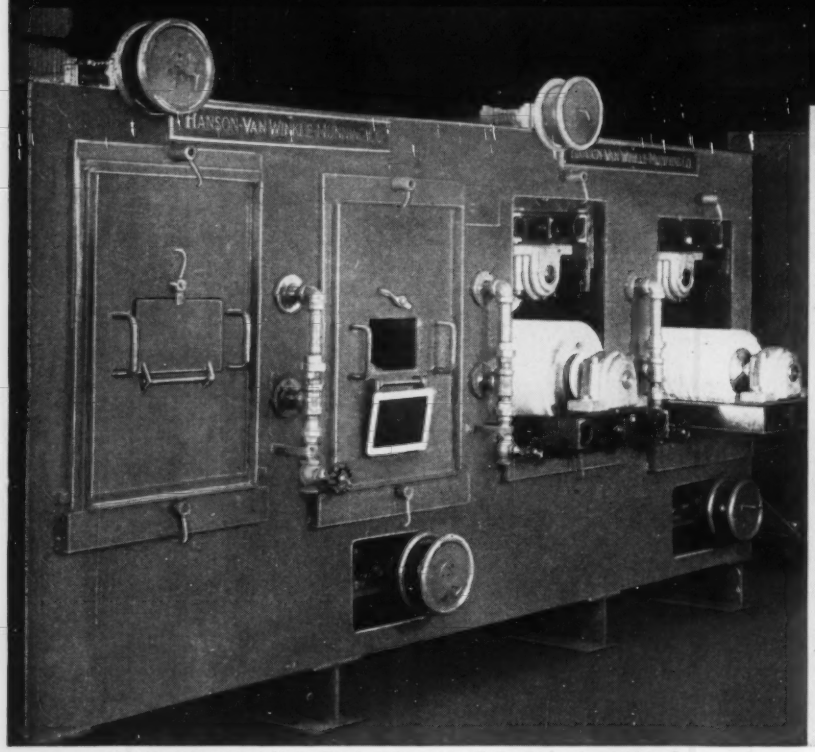
PIG IRON, Gross Ton	Oct. 16 1957	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$63.50	$55.50
Basic, Valley	66.00	66.00	66.00	62.50	54.50
Basic, deld., Phila.	70.01	70.01	70.01	66.26	59.25
No. 2 Fdry, NevilleIsland, Pa.	66.50	66.50	66.50	63.00	55.00
No. 2 Fdry, Chicago	66.50	66.50	66.50	63.00	55.00
No. 2 Fdry, deld., Phila.	70.51	70.51	70.51	66.76	59.75
No. 2 Fdry, Birm.	62.50	62.50	62.50	59.00	51.38
No. 2 Fdry (Birm.) deld. Cin.	70.20	70.20	70.20	66.70	58.93
Malleable, Valley	66.50	66.50	66.50	63.00	55.00
Malleable, Chicago	66.50	66.50	66.50	63.00	55.00
Ferromanganese, Duquesne.	245.00†	245.00†	255.00†	235.00†	228.00*

†74-76% Mn, net ton. *75-82% Mn, gross ton, Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$38.50	$40.50	$49.50	$55.50	$44.00
No. 1 Heavy Melt., E. Pa.	37.50	38.50	45.50	56.50	41.50
No. 1 Heavy Melt, Chicago	37.50	39.50	49.50	58.00	42.50
No. 1 Heavy Melt, Valley	36.50	38.50	51.50	63.50	44.00
No. 1 Heavy Melt, Cleve.	34.50	36.50	48.50	61.50	43.00
No. 1 Heavy Melt, Buffalo	38.50	38.50	47.50	57.50	43.00
Rails, Rerolling, Chicago	55.50	57.50	64.50	84.00	52.50
No. 1 Cast, Chicago	38.50	38.50	44.50	50.50	50.00

COKE, Net Ton					
Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$14.50	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	17.50	17.00

CONTINUOUS STRIP AND SHEET METAL PROCESSORS



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H-VW-M Scrubber Unit. Brush units are pulled out for inspection. In a matter of minutes they could be replaced, if necessary with new brushes.

...and no down time either! Brushes are replaced easily while unit is in operation!

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Get more facts about H-VW-M Scrubbers, with their exclusive easy-brush-replacement feature, by writing today.

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PLATEMANSHIP —Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

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Steel Prices

Mill prices as reported to STEEL, Oct 16, cents per pound except as otherwise noted. *Changes shown in italics* Code numbers following mill points indicate producing company. Key to producers, page 124; to footnotes page 126.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 ....$73.50

INGOTS, Alloy (NT)
Detroit S41 ....$77.00
Farrell,Pa. S3 ....77.00
Lowellville,O. S3 ....77.00
Midland,Pa. C18 ....77.00
Munhall,Pa. U5 ....77.00
Sharon,Pa. S3 ....77.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ....$77.50
Bridgeport,Conn. N19 ..80.50
Buffalo R2 ....77.50
Clairton,Pa. U5 ....77.50
Ensley,Ala. T2 ....77.50
Fairfield,Ala. T2 ....77.50
Fontana,Calif. K1 ....88.00
Gary,Ind. U5 ....77.50
Johnstown,Pa. B2 ....77.50
Lackawanna,N.Y. B2..77.50
Munhall,Pa. U5 ....77.50
S.Chicago,Ill. R2, U5..77.50
S.Duquesne,Pa. U5 ....77.50
Sterling,Ill. N15 ....77.50
Youngstown R2 ....77.50

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$96.00
Bridgeport,Conn. N19..101.00
Buffalo R2 ....96.00
Canton,O. R2 ....98.50
Clairton,Pa. U5 ....96.00
Conshohocken,Pa. A3..101.00
Ensley,Ala. T2 ....96.00
Fairfield,Ala. T2 ....96.00
Fontana,Calif. K1....105.50
Gary,Ind. U5 ....96.00
Geneva,Utah C11 ....96.00
Houston S5 ....101.00
Johnstown,Pa. B2 ....96.00
Lackawanna,N.Y. B2..96.00
LosAngeles B3 ....105.50
Midland,Pa. C18 ....96.00
Munhall,Pa. U5 ....96.00
Seattle B3 ....109.50
Sharon,Pa. S3 ....96.00
S.Chicago R2,U5,W14..96.00
S.Duquesne,Pa. U5 ....96.00
S.SanFrancisco B3 ....105.50
Warren,O. C17 ....96.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 ...$114.00
Bridgeport,Conn. N19..114.00
Buffalo R2 ....114.00
Canton,O. R2, T7 ....114.00
Conshohocken,Pa. A3..121.00
Detroit S41 ....114.00
Economy,Pa. B14 ....114.00
Farrell,Pa. S3 ....114.00
Fontana,Calif. K1 ....135.00
Gary,Ind. U5 ....114.00
Houston S5 ....119.00
Ind.Harbor,Ind. Y1 ..114.00
Johnstown,Pa. B2 ...114.00
Lackawanna,N.Y. B2..114.00
LosAngeles B3 ....134.00
Lowellville,O. S3 ....114.00
Massillon, O. R2 ....114.00
Midland,Pa. C18 ....114.00
Munhall,Pa. U5 ....114.00
Sharon,Pa. S3 ....114.00
S.Chicago R2,U5,W14..114.00
S.Duquesne,Pa. U5 ..114.00
Struthers,O. Y1 ....114.00
Warren,O. C17 ....114.00

ROUNDS, SEAMLESS TUBE (NT)
Bridgeport,Conn. N19 $122.50
Buffalo R2 ....117.50
Canton,O. R2 ....120.00
Cleveland,O. R2 ....117.50
Gary, Ind. U5 ....117.50
S.Chicago,Ill. R2, W14 117.50
S.Duquesne,Pa. U5 ...117.50
Warren,O. C17 ....117.50

SKELP
Aliquippa,Pa. J5 ....5.075
Munhall,Pa. U5 ....4.875
Warren,O. R2 ....4.875
Youngstown R2, U5 ..4.875

WIRE RODS
AlabamaCity,Ala. R2 ..6.15
Aliquippa,Pa. J5 ....6.15
Alton,Ill. L1 ....6.35
Buffalo W12 ....6.15
Cleveland A7 ....6.15
Donora,Pa. A7 ....6.15
Fairfield,Ala. T2 ....6.15
Houston S5 ....6.40
IndianaHarbor,Ind. Y1..6.15
Johnstown,Pa. B2 ....6.15
Joliet,Ill. A7 ....6.15
KansasCity,Mo. S5 ....6.40
Kokomo,Ind. C16 ....6.25
LosAngeles B3 ....6.95
Minnequa,Colo. C10 ....6.40
Monessen,Pa. P17 ....6.15
N.Tonawanda,N.Y. B11..6.15
Pittsburg,Calif. C11 ....6.95
Portsmouth,O. P12 ....6.15
Roebling,N.J. R5 ....6.25
S.Chicago,Ill. R2 ....6.15
SparrowsPoint,Md. B2 ..6.25
Sterling,Ill. (1) N15 ....6.15
Sterling,Ill. N15 ....6.25
Struthers,O. Y1 ....6.15
Worcester,Mass. A7 ....6.45

STRUCTURALS

Carbon Steel Std. Shapes
Ala.City,Ala. R2 ....5.275
Atlanta A11 ....5.475
Aliquippa,Pa. J5 ....5.275
Bessemer,Ala. T2 ....5.275
Bethlehem,Pa. B2 ....5.325
Birmingham C15 ....5.275
Clairton,Pa. U5 ....5.275
Fairfield,Ala. T2 ....5.275
Fontana,Calif. K1 ....6.075
Gary,Ind. U5 ....5.275
Geneva,Utah C11 ....5.275
Houston S5 ....5.375
Ind.Harbor,Ind. I-2 ....5.275
Johnstown,Pa. B2 ....5.325
Joliet,Ill. P22 ....5.275
KansasCity,Mo. S5 ....5.375
Lackawanna,N.Y. B2..5.325
LosAngeles B3 ....5.975
Minnequa,Colo. C10 ....5.375
Munhall,Pa. U5 ....5.275
Niles,Calif. P1 ....5.925
Phoenixville,Pa. P4 ....5.325
Portland,Oreg. O4 ....6.025
Seattle B3 ....6.025
S.Chicago,Ill. U5, W14..5.275
S.SanFrancisco B3 ....5.925
Sterling,Ill. N15 ....5.275
Torrance,Calif. C11 ....5.975
Weirton,W.Va. W6 ....5.275

Wide Flange
Bethlehem,Pa. B2 ....5.325
Clairton,Pa. U5 ....5.275
Fontana,Calif. K1 ....6.225
IndianaHarbor,Ind. I-2..5.525
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 ....5.275
Phoenixville,Pa. P4 ..5.325
S.Chicago,Ill. U5 ....5.275

Alloy Std. Shapes
Aliquippa,Pa. J5 ....6.55
Clairton,Pa. U5 ....6.55
Gary,Ind. U5 ....6.55
Houston S5 ....6.65
KansasCity,Mo. S5 ....6.65
Munhall,Pa. U5 ....6.55
S.Chicago,Ill. U5 ....6.55

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 ....7.75
Bessemer,Ala. T2 ....7.75
Bethlehem,Pa. B2 ....7.80
Clairton,Pa. U5 ....7.75
Fairfield,Ala. T2 ....7.75
Fontana,Calif. K1 ....8.55
Gary,Ind. U5 ....7.75
Geneva,Utah C11 ....7.75
Houston S5 ....7.85
Ind.Harbor,Ind. I-2, Y1 7.75
Johnstown,Pa. B2 ....7.80
KansasCity,Mo. S5 ....7.85
Lackawanna,N.Y. B2 ..7.80
LosAngeles B3 ....8.45
Munhall,Pa. U5 ....7.75
Seattle B3 ....8.50
S.Chicago,Ill. U5, W14..7.75
S.SanFrancisco B3 ....8.40
Struthers,O. Y1 ....7.75

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ....7.80
Lackawanna,N.Y. B2 ..7.80
Munhall,Pa. U5 ....7.75
S.Chicago,Ill. U5 ....7.75

PILING

BEARING PILES
Bethlehem,Pa. B2 ....5.325
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 ....5.275
S.Chicago,Ill. U5 ....5.275

STEEL SHEET PILING
Lackawanna,N.Y. B2 ..6.225
Munhall,Pa. U5 ....6.225
S.Chicago,Ill. U5 ....6.225

PLATES

PLATES, Carbon Steel
Ala.City,Ala. R2 ....5.10
Aliquippa,Pa. J5 ....5.10
Ashland,Ky. (15) A10...5.10
Bessemer,Ala. T2 ....5.10
Clairton,Pa. U5 ....5.10
Claymont,Del. C22 ....5.70
Cleveland J5, R2 ....5.20
Coatesville,Pa. L7 5-10
Conshohocken,Pa. A3 ..5.20
Ecorse,Mich. G5 ....5.20
Fairfield,Ala. T2 ....5.10
Fontana,Calif.(30) K1 ..5.90
Gary,Ind. U5 ....5.10
Geneva,Utah C11 ....5.10
GraniteCity,Ill. G4 ....5.30
Harrisburg,Pa. P4 ....5.80
Houston S5 ....5.20
Ind.Harbor,Ind. I-2, Y1..5.10
Johnstown,Pa. B2 ....5.10
Lackawanna,N.Y. B2 ..5.10
LoneStar,Tex. L6 ....5.45
Mansfield,O. E6 ....5.10
Minnequa,Colo. C10 ....5.95
Munhall,Pa. U5 ....5.10
Newport,Ky. A2 ....5.10
Pittsburgh J5 ....5.10
Riverdale,Ill. A1 ....5.10
Seattle B3 ....6.00
Sharon,Pa. S3 ....5.10
S.Chicago,Ill. U5, W14 5.10
SparrowsPoint,Md. B2 ..5.10
Sterling,Ill. N15 ....5.10
Steubenville,O. W10 ....5.10
Warren, O. R2 ....5.10
Youngstown R2, U5, Y1..5.10

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 ....7.35
Fontana,Calif. K1 ....7.55
Geneva,Utah C11 ....6.75
Houston S5 ....6.85
Johnstown,Pa. B2 ....6.75
SparrowsPoint,Md. B2 ..6.75

PIATES, Wrought Iron
Economy,Pa. B14 ....13.15

PLATES, H.S., L.A.
Aliquippa,Pa. J5 ....7.625
Bessemer,Ala. T2 ....7.625
Clairton,Pa. U5 ....7.625
Claymont,Del. C22 ....7.625
Cleveland J5, R2 ....7.625
Coatesville,Pa. L7 ....7.925
Conshohocton,Pa. A3..7.625
Economy,Pa. B14 ....7.625
Ecorse,Mich. G5 ....7.725
Fairfield,Ala. T2 ....7.625
Farrell,Pa. S3 ....7.625
Fontana,Calif.(30) K1 ..8.425
Gary,Ind. U5 ....7.625
Geneva,Utah C11 ....7.625
Houston S5 ....7.725
Ind.Harbor,Ind. I-2, Y1 7.625
Johnstown,Pa. B2 ....7.625
Munhall,Pa. U5 ....7.625
Pittsburgh J5 ....7.625
Seattle B3 ....8.525
Sharon,Pa. S3 ....7.625
S.Chicago,Ill. U5, W14 7.625
SparrowsPoint,Md. B2..7.625
Warren,O. R2 ....7.625
Youngstown U5 ....7.625

PLATES, ALLOY
Aliquippa,Pa. J5 ....7.20
Claymont,Del. C22 ....7.20
Coatesville,Pa. L7 ....7.20
Economy,Pa. B14 ....7.20
Farrell,Pa. S3 ....7.20
Fontana,Calif.(30) K1 ..8.00
Gary,Ind. U5 ....7.20
Houston S5 ....7.30
Ind.Harbor,Ind Y1 ....7.20
Johnstown,Pa. B2 ....7.20
Lowellville,O. S3 ....7.20
Munhall,Pa. U5 ....7.20
Newport,Ky. A2 ....7.20
Pittsburgh J5 ....7.20
Seattle B3 ....8.10
Sharon,Pa. S3 ....7.20
S.Chicago,Ill. U5, W14..7.20
SparrowsPoint,Md. B2 ..7.20
Youngstown Y1 ....7.20

FLOOR PLATES
Cleveland J5 ....6.175
Conshohocken,Pa. A3 ..6.175
Ind.Harbor,Ind. I-2 ..6.175
Munhall,Pa U5 ....6.175
S.Chicago,Ill. U5 ....6.175

PLATES, Ingot Iron
Ashland c.l. (15) A10...5.35
Ashland l.c.l. (15) A10..5.85
Cleveland c.l. R2 ....5.85
Warren,O. c.l. R2 ....5.85

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ..5.425
Aliquippa,Pa.(9) J5 ....5.425
Alton,Ill. L1 ....5.625
Atlanta(9) A11 ....5.625
Bessemer,Ala.(9) T2 ..5.425
Birmingham(9) C15 ....5.425
Bridgeport,Conn.(9) N19 5.65
Buffalo(9) R2 ....5.425
Clairton,Pa. (9) U5 ....5.425
Cleveland(9) R2 ....5.425
Ecorse,Mich.(9) G5 ....5.525
Emeryville,Calif. J7 ....6.175
Fairfield,Ala.(9) T2 ..5.425
Fairless,Pa. (9) U5 ....5.575
Fontana,Calif.(9) K1 ..6.125
Gary,Ind.(9) U5 ....5.425
Houston(9) S5 ....5.675
Ind.Harbor(9) I-2, Y1 5.425
Johnstown,Pa.(9) B2 ..5.425
Joliet,Ill. P22 ....5.425
KansasCity,Mo.(9) S5 ..5.675
Lackawanna(9) B2 ....5.425
LosAngeles(9) B3 ....6.125
Milton,Pa. M18 ....5.575
Minnequa,Colo. C10 ...5.875
Niles,Calif. P1 ....6.125
N.T'wanda,N.Y.(46)B11 5.775
Pittsburg,Calif.(9) C11..6.125
Pittsburgh(9) J5 ....5.425
Portland,Oreg. O4 ....6.175
Seattle B3, N14 ....6.175
S.Ch'c'go(9)R2,U5,W14 5.425
S.Duquesne,Pa.(9) U5..5.425
S.SanFran.,Calif.(9)B3 6.175
Sterling,Ill.(1)(9) N15..5.425
Sterling,Ill.(9) N15 ....5.525
Struthers,O. Y1 ....5.425
Tonawanda,N.Y. B12 ..5.425
Torrance,Calif.(9) C11..6.125
Youngstown(9) R2, U5..5.425

BARS, H.R. Leaded Alloy (Including leaded extra)
Warren,O. C17 ....7.475

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 ....6.475
Bethlehem,Pa. B2 ....6.475
Bridgeport,Conn. N19 ..6.55
Buffalo R2 ....6.475
Canton,O. R2, T7 ....6.475
Clairton,Pa. U5 ....6.475
Detroit S41 ....6.475
Economy,Pa. B14 ....6.475
Ecorse,Mich. G5 ....6.575
Fairless,Pa. U5 ....6.625
Farrell,Pa. S3 ....6.475
Fontana,Calif. K1 ....7.525
Gary,Ind. U5 ....6.475
Houston S5 ....6.725
Ind.Harbor,Ind. I-2, Y1 6.475
Johnstown,Pa. B2 ....6.475
KansasCity,Mo. S5 ....6.725
Lackawanna,N.Y. B2 ..6.475
Lowellville,O. S3 ....6.475
LosAngeles B3 ....7.525
Massillon,O. R2 ....6.475
Midland,Pa. C18 ....6.475
Pittsburgh J5 ....6.475
Sharon,Pa. S3 ....6.475
S.Chicago R2, U5, W14 6.475
S.Duquesne,Pa. U5 ....6.475
Struthers,O. Y1 ....6.475
Warren,O. C17 ....6.475
Youngstown U5 ....6.475

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5 ....7.925
Bessemer,Ala. T2 ....7.925
Bethlehem,Pa. B2 ....7.925
Bridgeport,Conn. N19 ..7.95
Clairton,Pa. U5 ....7.925
Cleveland R2 ....7.925
Ecorse,Mich. G5 ....8.025
Fairfield,Ala. T2 ....7.925
Fontana,Calif. K1 ....8.625
Gary,Ind. U5 ....7.925
Houston S5 ....8.175
Ind.Harbor,Ind. Y1 ....7.925
Johnstown,Pa. B2 ....7.925
KansasCity,Mo. S5 ....8.175
Lackawanna,N.Y. B2..7.925
LosAngeles B3 ....8.625
Pittsburgh J5 ....7.925
Seattle B3 ....8.675
S.Chicago,Ill. U5, W14 7.925
S.Duquesne,Pa. U5 ....7.925
S.SanFrancisco B3 ....8.675
Struthers,O. Y1 ....7.925
Youngstown U5 ....7.925

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 ..5.575
Houston(9) S5 ....5.675
KansasCity,Mo.(9) S5..5.675
Lackawanna(9) B2 ....5.425
Sterling,Ill. N15 ....5.525
Sterling,Ill.(1) N15 ..5.425
Tonawanda,N.Y. B12 ..5.425

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 ....5.425
Atlanta A11 ....5.625
Joliet,Ill. P22 ....5.425
Niles,Calif. P1 ....6.125
Pittsburgh J5 ....5.425
Portland,Oreg. O4 ....6.175
SanFrancisco S7 ....6.275
Seattle B3 ....6.175

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 ....6.55
Clairton,Pa. U5 ....6.55
Gary,Ind. U5 ....6.55
Houston S5 ....6.80
KansasCity,Mo. S5 ....6.80
Pittsburgh J5 ....6.55
Youngstown U5 ....6.55

Bars, C.F., Leaded Alloy (Including leaded extra)
Ambridge,Pa. W18 ...9.925
BeaverFalls,Pa. M12 ..9.925
Camden,N.J. P13 ....10.10
Chicago W18 ....9.925
Cleveland C20 ....9.925
Elyria,O. WS 9.925
LosAngeles P2, S30
(Grade A) 11.30
(Grade B) 11.80
Monaca,Pa. S17 ....9.925
Newark,N.J. W18 ....10.10
SpringCity,Pa. K3 ....10.10
Warren,O. C17 ....9.925

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....7.30
BeaverFalls,Pa. M12,R2 7.30
Birmingham C15 ....7.90
Bridgeport,Conn. N19 ..7.65
Buffalo B5 ....7.35
Camden,N.J. P13 ....7.75
Carnegie,Pa. C12 ....7.30
Chicago W18 ....7.30
Cleveland A7, C20 ....7.30
Detroit B5, P17 ....7.50
Detroit S41 ....7.30
Donora,Pa. A7 ....7.30
Elyria,O. W8 ....7.30
FranklinPark,Ill. N5 ..7.30
Gary,Ind R2 ....7.30
GreenBay,Wis. F7 ....7.30
Hammond,Ind. J5, L2 ..7.30
Hartford,Conn. R2 ....7.80
Harvey,Ill. B5 ....7.30
LosAngeles P2, S30 ...8.75
LosAngeles R2 ....8.75
Mansfield,Mass. B5 ....7.85
Massillon,O. R2, R8 ....7.30
Midland,Pa. C18 ....7.30
Monaca,Pa. S17 ....7.30
Newark,N.J. W18 ....7.75
NewCastle,Pa.(17) B4 ..7.30
Pittsburgh J5 ....7.30
Plymouth,Mich. P5 ....7.55
Putnam,Conn. W18 ....7.85
Readville,Mass. C14 ....7.85
S.Chicago,Ill. W14 ....7.30
SpringCity,Pa. K3 ....7.75
Struthers,O. Y1 ....7.30
Warren,O. C17 ....7.30
Willimantic,Conn. J5 ..7.80
Waukegan,Ill. A7 ....7.30
Youngstown F3, Y1 ....7.30

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19 6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....8.775
BeaverFalls,Pa.M12,R2 8.775
Bethlehem,Pa. B2 ....8.775
Bridgeport,Conn. N19 ..8.925
Buffalo B5 ....8.775
Camden,N.J. P13 ....8.95
Canton,O. T7 ....8.775
Carnegie,Pa. C12 ....8.775
Chicago W18 ....8.775
Cleveland A7, C20 ....8.775
Detroit B5, P17 ....8.975
Detroit S41 ....8.775
Donora,Pa. A7 ....8.775
Elyria,O. WS 8.775
FranklinPark,Ill. N5 ..8.775
Gary,Ind. R2 ....8.775
GreenBay,Wis. F7 ....8.775
Hammond,Ind. J5, L2 ..8.775
Hartford,Conn. R2 ....9.075
Harvey,Ill B5 ....8.775
Lackawanna,N.Y. B2 ..8.775
LosAngeles P2, S30 ...10.65
Mansfield,Mass. B5 ....9.075
Massillon,O. R2, R8 ....8.775
Midland,Pa. C18 ....8.775
Monaca,Pa. S17 ....8.775
Newark,N.J. W18 ....8.95
Plymouth,Mich. P5 ....8.975
S.Chicago W14 ....8.775
SpringCity,Pa. K3 ....8.95
Struthers,O. Y1 ....8.775
Warren,O. C17 ....8.775
Waukegan,Ill. A7 ....8.775
Worcester,Mass. A7 ....9.075
Youngstown F3, Y1 ..8.775

BARS, Reinforcing (To Fabricators)

Ala.City,Ala. R2 .....5.425
Atlanta A11 .....5.625
Birmingham C15, S42 5.425
Bridgeport,Conn. N19 ...5.65
Buffalo R2 .....5.425
Cleveland R2 .....5.425
Ecorse,Mich. G5 .....5.775
Emeryville,Calif. J7 ...6.175
Fairfield,Ala. T2 .....5.425
Fairless,Pa. U5 .....5.575
Fontana,Calif. K1 .....6.125
Ft.Worth,Tex.(4)(26)T4 5.875
Gary, Ind. U5 .....5.425
Houston S5 .....5.675
Ind.Harbor,Ind. I-2,Y1 5.425
Johnstown,Pa. B2 .....5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo. S5 .....5.675
Lackawanna,N.Y. B2 ..5.425
LosAngeles B3 .....6.125
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ...5.875
Niles,Calif. P1 .....6.125
Pittsburg,Calif. C11 ..6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 ....6.175
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.175
S.Chicago,Ill. R2 .....5.425
S.Duquesne,Pa. U5 ....5.425
S.SanFrancisco B3 ....6.175
SparrowsPoint,Md. B2 ..5.425
Sterling,Ill.(1) N15 ...5.425
Sterling, Ill. N15 .....5.525
Struthers,O. Y1 .....5.425
Tonawanda,N.Y. B12 ...6.00
Torrance,Calif. C11 ....6.125
Youngstown R2, U5 ..5.425

BARS, Reinforcing (Fabricated; to Consumers)

Boston B2 .....7.56
Chicago U8 .....6.91
Cleveland U8 .....6.89
Johnstown,Pa. B2 .....7.08
KansasCity,Mo. S5 .....7.35
Lackawanna,N.Y. B2 ..6.85
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.55
Philadelphia U8 .....7.38
Pittsburgh J5, U8 ....7.10
Seattle B3, N14 .....7.70
SparrowsPt.,Md. B2 ....7.08
St.Paul U8 .....7.92
Williamsport,Pa. S19 ..7.00

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy,(Staybolt)B14 18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2.5.325
ChicagoHts.(4)(44) I-2.5.425
ChicagoHts.(4) C2 ....5.425
Ft.Worth,Tex.(26) T4. .5.875
Franklin,Pa. (3) F5 ..5.325
Franklin,Pa. (4) F5 ..5.425
JerseyShore,Pa.(3) J8 ..5.30
Marion,O.(3) P11 ....5.325
Tonawanda(3) R12 ....5.325
Tonawanda(4) B12 ....6.00
Williamsport,Pa. (3)S19 5.50

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

Ala.City,Ala. R2 .....4.925
Allenport,Pa. P7 .....4.925
Ashland,Ky.(8) A10 ..4.925
Cleveland J5, R2 ....4.925
Conshohocken,Pa. A3 ..4.975
Detroit(8) M1 .....5.025
Ecorse,Mich. G5 .....5.025
Fairfield,Ala. T2 ....4.925
Fairless,Pa. U5 .....4.975
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....4.925
Geneva,Utah C11 .....5.025
GraniteCity,Ill.(8) G4 ..5.125
Ind.Harbor,Ind. I-2, Y1 4.925
Irvin,Pa. U5 .....4.925
Lackawanna,N.Y. B2 ..4.925
Mansfield,O. E6 .....4.925
Munhall,Pa. U5 .....4.925
Newport,Ky.(8) A2 ..4.925
Niles,O. M21, S3 ....4.925
Pittsburg,Calif. C11 ..5.625
Pittsburgh J5 .....4.925
Portsmouth,O. P12 ....4.925
Riverdale,Ill. A1 .....4.925
Sharon,Pa. S3 .....4.925
S.Chicago,Ill. W14 ....4.925
SparrowsPoint,Md. B2. .4.925
Steubenville,O. W10 ...4.925
Warren,O. R2 .....4.925
Weirton,W.Va. W6 ....4.925
Youngstown U5, Y1 ..4.925

SHEETS, H.R., (19 Ga. & Lighter)

Niles,O. M21 .....6.05

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.10
Ind.Harbor,Ind. Y1 ....8.10
Irvin,Pa. U5 .....8.10
Munhall,Pa. U5 .....8.10
Newport,Ky. A2 .....8.10
Youngstown U5, Y1 ...8.10

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Cleveland J5, R2 ....7.275
Conshohocken,Pa. A3 ..7.325
Ecorse,Mich. G5 .....7.375
Fairfield,Ala. T2 ....7.275
Fairless,Pa. U5 .....7.325
Farrell,Pa. S3 .....7.275
Fontana,Calif. K1 ....8.175
Gary,Ind. U5 .....7.275
Ind.Harbor,Ind. I-2, Y1 7.275
Irvin,Pa. U5 .....7.275
Lackawanna (35) B2 ..7.275
Munhall,Pa. U5 .....7.275
Pittsburgh J5 .....7.275
S.Chicago,Ill. U5, W14 7.275
Sharon,Pa. S3 .....7.275
SparrowsPoint(36) B2. .7.275
Warren,O. R2 .....7.275
Weirton,W.Va. W6 ....7.275
Youngstown U5, Y1 ..7.275

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ..5.175
Cleveland R2 .....5.675
Warren,O. R2 .....5.675

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....6.80
Middletown,O. A10 ....6.55
Warren,O. R2 .....6.80

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.05
Allenport,Pa. P7 .....6.05
Cleveland J5, R2 .....6.05
Conshohocken,Pa. A3 ..6.10
Detroit M1 .....6.05
Ecorse,Mich. G5 .....6.15
Fairfield,Ala. T2 .....6.05
Fairless,Pa. U5 .....6.10
Follansbee,W.Va. F4 ...6.05
Fontana, Calif. K1 ....7.30
Gary,Ind. U5 .....6.05
GraniteCity,Ill. G4 ....6.25
Ind.Harbor,Ind. I-2, Y1 6.05
Irvin,Pa. U5 .....6.05
Lackawanna,N.Y. B2 ..6.05
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....6.05
Newport,Ky. A2 .....6.05
Pittsburg,Calif. C11 ..7.00
Pittsburgh J5 .....6.05
Portsmouth,O. P12 ....6.05
SparowsPoint,Md. B2 ...6.05
Steubenville,O. W10 ...6.05
Warren,O. R2 .....6.05
Weirton,W.Va. W6 ....6.05
Yorkville, O. W10 .....6.05
Youngstown Y1 .....6.05

SHEETS, Cold-Rolled High-Strength, Low-Alloy

Cleveland J5, R2 ....8.975
Ecorse, Mch. G5 .....9.075
Fairless,Pa. U5 .....9.025
Fontana,Calif. K1 ....10.275
Gary,Ind. U5 .....8.975
IndianaHarbor,Ind. Y1 8.975
Irvin,Pa. U5 .....8.975
Lackawanna (37) B2 ..8.975
Pittsburgh J5 .....8.975
SparrowsPoint (38) B2 8.975
Warren,O. R2 .....8.975
Weirton,W.Va. W6 ....8.975
Youngstown Y1 .....8.975

SHEETS, Culvert

	Cu Steel	Cu Fe
Ashland,Ky. A10	.6.95	7.20
Canton,O. R2	....6.95	7.45
Fairfield T2	....6.95	7.20
Gary,Ind. U5	....6.95	7.20
GraniteCity,Ill. G4	7.15	...
Ind.Harbor I-2	...6.95	7.20
Irvin,Pa. U5	.....6.95	7.20
Kokomo,Ind. C16	.7.05	...
MartinsFry. W10	.6.95	7.20
Pitts.,Calif. C11	..7.70	...
Pittsburgh J5	....6.95	...
SparrowsPt. B2	..6.95	...

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 .. 7.20

SHEETS, Galvanized Steel Hot-Dipped

Ala.City,Ala. R2 .....6.60‡
Ashland,Ky. A10 .....6.60†
Canton,O. R2 .....6.60‡
Dover,O. R1 .....6.60†
Fairfield,Ala. T2 .....6.60†
Gary,Ind. U5 .....6.00*
GraniteCity,Ill. G4 ....6.80*
Ind.Harbor,Ind. I-2 ....6.60†
Irvin,Pa. U5 .....6.60*
Kokomo,Ind. C16 .....6.70‡
MartinsFerry,O. W10 ..6.60*
Middletown,O. A10 ....6.60†
Pittsburg,Calif. C11 ...7.35*
Pittsburgh J5 .....6.60†
SparrowsPt.,Md. B2 ....6.60†
Warren,O. R2 .....6.60†
Weirton,W.Va. W6 ....6.60*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.325

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....9.725
SparrowsPt.(39) B2 ...9.725

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.00
Irvin,Pa. U5 .....7.00

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....6.85
Middletown,O. A10 ....6.85

SHEETS, Electrogalvanized

Cleveland (28) R2 ....7.425
Niles,O.(28) R2 .....7.425
Weirton,W.Va. W6 ...7.275

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1).9.25
Butler,Pa. A10 (type 2).9.35

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.625
Cleveland R2 .....6.625
Gary,Ind. U5 .....6.625
GraniteCity,Ill. G4 ....6.825
Ind.Harbor,Ind. I-2,Y1 6.625
Irvin,Pa. U5 .....6.625
Middletown,O. A10 ....6.625
Niles,O. M21, S3 .....6.625
Youngstown Y1 .....6.625

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ...8.65
Ind.Harbor,Ind. I-2 ...8.475
Yorkville,O. W10 .....8.475

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.00
Gary,Ind. U5 .....7.00
Mansfield,O. E6 .....7.00
Middletown,O. A10 ....7.00
Niles,O. M21, S3 .....7.00
Warren,O. R2 .....7.00
Weirton,W.Va. W6 ....7.00

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 .....7.40

Key to Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C7 Cleve.Cold Rolling Mills
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Prod. Dept., Wickwire Spencer Steel Division
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.

D2 Detroit Steel Corp.
D3 Dearborn Division Sharon Steel Corp.
D4 Disston Division, H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 EasternGas&FuelAssoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md.Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Division, Merritt-Chapman&Scott
M21 Mallory-Sharon Titanium Corp.
M22 Mill Strip Products Co.

N1 National Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelson Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N14 Northwest.SteelRoll.Mill
N15 Northwestern S.&W. Co.
N19 Northeastern Steel Corp.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co. Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Meals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Work
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless Steel Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.
T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Div., H. K. Porter Co. Inc.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet&Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala City, Ala. (27) R2	4.925
Allenport, Pa. P7	4.925
Alton, Ill. L1	5.125
Ashland, Ky. (8) A10	4.925
Atlanta A11	5.125
Bessemer, Ala. T2	4.925
Birmingham C15	4.925
Buffalo (27) R2	4.925
Conshohocken, Pa. A3	4.975
Detroit M1	5.025
Ecorse, Mich. G5	5.025
Fairfield, Ala. T2	4.925
Fontana, Calif. K1	5.825
Gary, Ind. U5	4.925
Ind. Harbor, Ind. I-2, Y1	4.925
Johnstown, Pa. (25) B2	4.925
Lackaw'na, N.Y. (25) B2	4.925
LosAngeles (25) B3	5.675
Minnequa, Colo. C10	6.025
Pittsburg, Calif. C11	5.675
Riverdale, Ill. A1	4.925
SanFrancisco S7	6.35
Seattle (25) B3	6.35
Seattle N14	6.35
Sharon, Pa. S3	4.925
S. SanFrancisco (25) B3	5.675
SparrowsPoint, Md. B2	4.925
Sterling, Ill. (1) N15	4.925
Sterling, Ill. N15	5.025
Torrance, Calif. C11	5.675
Warren, O. R2	4.925
Weirton, W.Va. W6	4.925
Youngstown U5	4.925

STRIP, Hot-Rolled Alloy

Carnegie, Pa. S18	8.10
Farrell, Pa. S3	8.10
Gary, Ind. U5	8.10
Houston S5	8.35
Ind. Harbor, Ind. Y1	8.10
KansasCity, Mo. S5	8.35
LosAngeles B3	9.30
Lowellville, O. S3	8.10
Newport, Ky. A2	8.10
Sharon, Pa. S3	8.10
S. Chicago, Ill. W14	8.10
Youngstown U5, Y1	8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer, Ala. T2	7.325
Conshohocken, Pa. A3	7.325
Ecorse, Mich. G5	7.425
Fairfield, Ala. T2	7.325
Farrell, Pa. S3	7.325
Gary, Ind. U5	7.325
Ind. Harbor, Ind. I-2, Y1	7.325
Lackawanna, N.Y. B2	7.325
LosAngeles (25) B3	8.075
Seattle (25) B3	8.325
Sharon, Pa. S3	7.325
S. Chicago, Ill. W14	7.325
S. SanFrancisco (25) B3	8.075
SparrowsPoint, Md. B2	7.325
Warren, O. R2	7.325
Weirton, W.Va. W6	7.325
Youngstown U5, Y1	7.325

STRIP, Hot-Rolled Ingot Iron

Ashland, Ky. (8) A10	5.175
Warren, O. R2	5.675

STRIP, Cold-Rolled Carbon

Anderson, Ind. G6	7.15
Baltimore T6	7.15
Boston T6	7.70
Buffalo S40	7.15
Cleveland A7, J5	7.15
Conshohocken, Pa. A3	7.20
Dearborn, Mich. D3	7.25
Detroit D2, M1, P20	7.25
Dover, O. G6	7.15
Ecorse, Mich. G5	7.25
Evanston, Ill. M22	7.25
Follansbee, W.Va. F4	7.15
Fontana, Calif. K1	9.00
FranklinPark, Ill. T6	7.25
Ind. Harbor, Ind. Y1	7.15
Indianapolis J5	7.30
LosAngeles J5	9.05
LosAngeles C1	9.20
NewBedford, Mass. R10	7.60
NewBritain (10) S15	7.15
NewCastle, Pa. B4, E5	7.15
NewHaven, Conn. D2	7.60
NewKensington, Pa. A6	7.15
Pawtucket, R.I. R3	7.80
Pawtucket, R.I. N8	7.70
Philadelphia (45) P24	7.70
Pittsburgh J5	7.15
Riverdale, Ill. A1	7.25
Rome, N.Y. (32) R6	7.15
Sharon, Pa. S3	7.15
Trenton, N.J. (31) R5	8.60
Wallingford, Conn. W2	7.60
Warren, O. R2, T5	7.15
Weirton, W.Va. W6	7.15
Worcester, Mass. A7	7.70
Youngstown J5, Y1	7.15

STRIP, Cold-Rolled Alloy

Boston T6	15.40
Carnegie, Pa. S18	15.05
Cleveland A7	15.05
Dover, O. G6	15.05
Farrell, Pa. S3	15.05
FranklinPark, Ill. T6	15.05
Harrison, N.J. C18	15.05
Indianapolis J5	15.20
Lowellville, O. S3	15.05
Pawtucket, R.I. N8	15.40
Riverdale, Ill. A1	15.05
Sharon, Pa. S3	15.05
Worcester, Mass. A7	15.35
Youngstown J5	15.05

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.45
Dearborn, Mich. D3	10.60
Dover, O. G6	10.45
Ecorse, Mich. G5	10.55
Farrell, Pa. S3	10.50
Ind. Harbor, Ind. Y1	10.65
Sharon, Pa. S3	10.50
Warren, O. R2	10.45
Weirton, W.Va. W6	10.50
Youngstown Y1	10.65

STRIP, Cold-Rolled Ingot Iron

Warren, O. R2	7.90

STRIP, C.R. Electrogalvanized

Cleveland A7	7.15*
Dover, O. G6	7.15*
Evanston, Ill. M22	7.25*
Riverdale, Ill. A1	7.25*
Warren, O. B9, T5	7.15*
Worcester, Mass. A7	7.70*
Youngstown J5	7.15*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon, Pa. S3	7.275

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Riverdale, Ill. A1	5.50
Sharon, Pa. S3	5.35
Youngstown U5	5.35

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie, Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn, Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover, O. G6	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. M22	8.95	10.40	12.60	....	....
Fostoria, O. S1	10.05	11.15	13.10	16.10	....
FranklinPark, Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison N.J C18	...	....	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.80	14.80	17.80	....
LosAngeles J5	11.15	12.80	14.80	....	....
NewBritain, Conn. (10) S15	8.95	10.40	12.60	15.60	18.55
NewCastle, Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven, Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington, Pa. A6	8.95	10.40	12.60	15.60	....
NewYork W3	...	10.70	12.90	16.10	19.30
Pawtucket, R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill A1	9.05	10.40	12.60	15.60	18.55
Rome, N.Y. (32) R6	8.95	10.40	12.60	15.60	18.55
Sharon, Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton, N.J. R5	...	10.70	12.90	16.10	19.30
Wallingford, Conn. W2	...	10.70	12.90	15.90	18.75
Warren, O. T5	9.40	10.70	12.90	15.90	18.85
Worcester, Mass. A7, T6	8.95	10.40	12.60	15.60	18.55
Youngstown J5	9.50	10.70	12.90	15.90	18.85
	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol, Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	....	....
Fostoria, O. S1	18.30	22.15	....
FranklinPark, Ill. T6	18.45	22.30	26.65
Harrison, N.J. C18	18.10	21.95	26.30
NewYork W3	18.10	21.95	26.30
Palmer, Mass. W12	18.10	....	....
Trenton, N.J. R5	18.10	21.95	26.30
Worcester, Mass. A7, T6	18.10	21.95	26.30
Youngstown J5	18.45	22.30	26.65

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom, W.Va. W10	....	....	11.80	12.90	13.95
Mansfield, O. E6	9.625	11.10	11.80	12.90	13.95
Newport, Ky. A2	9.625	11.10	11.80	12.90	13.95
Niles, O. M21, S3	9.625	11.10	11.80	12.90	....
Vandergrift, Pa. U5	....	11.10	11.80	12.90	13.95
Warren, O. R2	9.625	11.10	11.80	12.90	....
Zanesville, O. A10	....	11.10	11.80	12.90	13.95
Zanesville, O. A10 (SP Coils)	....	....	11.55	12.65	13.70

C.R. COILS & CUT LENGTHS (22 Ga.) Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom, W.Va. W10	....	11.35	12.05	13.15	14.20
Brackenridge, Pa. A4	....	....	12.05	13.15	14.20
GraniteCity, Ill. G4	9.825*	11.05*	11.75*	12.85*	....
IndianaHarbor, Ind. I-2	9.625*	10.85*	11.55*	12.65*	....
Mansfield, O. E6	9.625*	11.35	12.05	13.50	14.20
Vandergrift, Pa. U5	9.625*	11.35	12.05	13.15	14.20
Warren, O. R2	9.625*	11.35	12.05	13.15	14.20
Zanesville, O. A10 (FP coils)	...	11.35	12.05	13.15	14.20

H.R. SHEETS (22Ga., cut lengths)	Transformer Grades T-72	T-65	T-58	T-52
BeechBotton, W.Va. W10	15.00	15.55	16.05	17.10
Vandergrift, Pa. U5	14 75	15.55	16.05	17.10
Zanesville, O. A10	15.00	15.55	16.05	17.10

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge, Pa. A4	....	17.60	19.20	19.70	20.20	....
Butler, Pa. A10	....	....	....	19.20	19.70	20.20
Vandergrift, Pa. U5	..	16.60	17.60	19.20	19.70	20.20
Warren, O. R2	....	....	....	....	....	....
						15.25‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. **Cut length, ¾-cent lower.

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa, Pa. J5	$8.75	$9.00	$9.40
Fairfield, Ala T2	8.85	9.10	9.50
Fairless, Pa. U5	8.85	9.10	9.50
Fontana, Calif. K1	9.50	9.75	10.15
Gary, Ind. U5	8.75	9.00	9.40
GraniteCity, Ill. G4	8.85	9.10	9.50
IndianaHarbor, Ind. I-2, Y1	8.75	9.00	9.40
Irvin, Pa U5	8.75	9.00	9.40
Niles, O. R2	8.75	9.00	9.40
Pittsburg, Calif. C11	9.50	9.75	10.15
SparrowsPoint, Md. B2	8.85	9.10	9.50
Weirton, W.Va. W6	8.75	9.00	9.40
Yorkville, O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa, Pa. J5	7.725	7.925	....
Niles, O. R2	7.725	7.925	8.125

TINPLATE, American	1.25 lb	1.50 lb
Aliquippa, Pa. J5	$10.05	$10.30
Fairfield, Ala. T2	10.15	10.40
Fairless, Pa. U5	10.15	10.40
Fontana, Calif. K1	10.80	11.05
Gary, Ind. U5	10.05	10.30
Irvin, Pa. U5	10.05	10.30
Pitts., Calif. C11	10.80	11.05
Sp. Pt., Md. B2	10.15	10.40
Weirton, W.Va. W6	10.05	10.30
Yorkville, O. W10	10.05	10.30

BLACK PLATE (Base Box)	
Aliquippa, Pa. J5	$7.85
Fairfield, Ala. T2	7.95
Fairless, Pa. U5	7.95
Fontana, Calif. K1	8.60
Gary, Ind. U5	7.85
GraniteCity, Ill. G4	7.95
Ind. Harbor, Ind. I-2, Y1	7.85
Irvin, Pa. U5	7.85
Niles, O. R2	7.85
Pittsburg, Calif. C11	8.60
SparrowsPoint, Md. B2	7.95
Weirton, W.Va. W6	7.85
Yorkville, O. W10	7.85

HOLLOWARE ENAMELING

Black Plate (29 Gage)	
Aliquippa, Pa. J5	$7.50
Gary, Ind. U5	7.50
GraniteCity, Ill. G4	7.60
Ind. Harbor, Ind. Y1	7.50
Irvin, Pa. U5	7.50
Yorkville, O. W10	7.50

MANUFACTURING TERNES (Special Coated, Base Box)

Gary, Ind. U5	$9.70
Irvin, Pa. U5	9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)

Gary, Ind. U5	$11.25

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity, Ala. R2	7.65
Aliquippa, Pa. J5	7.65
Alton, Ill. L1	7.85
Atlanta A11	7.85
Bartonville, Ill. K4	7.75
Buffalo W12	7.65
Chicago W13	7.65
Cleveland A7, C20	7.65
Crawfordsville, Ind. M8	7.75
Donora, Pa. A7	7.65
Duluth A7	7.65
Fairfield, Ala. T2	7.65
Fostoria, O. (24) S1	7.75
Houston S5	7.90
Jacksonville, Fla. M8	8.00
Johnstown, Pa. B2	7.65
Joliet, Ill. A7	7.65
KansasCity, Mo. S5	7.90
Kokomo, Ind. C16	7.75
LosAngeles B3	8.60
Minnequa, Colo. C10	7.90
Monessen, Pa. P7, P16	7.65
N. Tonawanda, N.Y. B11	7.65
Palmer, Mass. W12	7.95
Pittsburg, Calif. C11	8.60
Portsmouth, O. P12	7.65
Rankin, Pa. A7	7.65
S. Chicago, Ill. R2	7.65
S. SanFrancisco C10	8.60
SparrowsPoint, Md. B2	7.75
Sterling, Ill. (1) N15	7.65
Sterling, Ill. N15	7.75
Struthers, O. Y1	7.65
Waukegan, Ill. A7	7.65
Worcester, Mass. A7	7.95

WIRE, Gal'd ACSR for Cores

Bartonville, Ill. K4	12.65
Buffalo W12	12.65
Cleveland A7	12.65
Donora, Pa. A7	12.65
Duluth A7	12.65
Johnstown, Pa. B2	12.65
Minnequa, Colo. C10	12.775
Monessen, Pa. P16	12.65
Muncie, Ind. I-7	12.85
NewHaven, Conn. A7	12.95
Palmer, Mass. W12	12.95
Pittsburg, Calif. C11	13.45
Portsmouth, O. P12	12.65
Roebling, N.J. R5	12.95
SparrowsPt., Md. B2	12.75
Struthers, O. Y1	12.65
Trenton, N.J. A7	12.95
Waukegan, Ill. A7	12.65
Worcester, Mass. A7	12.95

WIRE, Upholstery Spring

Aliquippa, Pa. J5	9.30
Alton, Ill. L1	9.50
Buffalo W12	9.30
Cleveland A7	9.30
Donora, Pa. A7	9.30
Duluth A7	9.30
Johnstown, Pa. B2	9.30
KansasCity, Mo. S5	9.55
LosAngeles B3	10.25
Minnequa, Colo. C10	9.50
Monessen, Pa. P7, P16	9.30
NewHaven, Conn. A7	9.60
Palmer, Mass. W12	9.60
Pittsburg, Calif. C11	10.25
Portsmouth, O. P12	9.30
Roebling, N.J. R5	9.60
S. Chicago, Ill. R2	9.30
S. SanFrancisco C10	10.25
SparrowsPt., Md. B2	9.40
Struthers, O. Y1	9.30
Trenton, N.J. A7	9.60
Waukegan, Ill. A7	9.30
Worcester, Mass. A7	9.60

WIRE, MB Spring, High Carbon

Aliquippa, Pa. J5	9.30
Alton, Ill. L1	9.50
Bartonville, Ill. K4	9.40
Buffalo W12	9.30
Cleveland A7	9.30
Donora, Pa. A7	9.30
Duluth A7	9.30
Fostoria, O. S1	9.35
Johnstown, Pa. B2	9.30
KansasCity, Mo. S5	9.55
LosAngeles B3	10.25
Millbury, Mass. (12) N6	9.60
Minnequa, Colo. C10	9.50
Monessen, Pa. P7, P16	9.30
Muncie, Ind. I-7	9.50
Palmer, Mass. (12) W12	9.60
Pittsburg, Calif. C11	10.25
Portsmouth, O. P12	9.30
Roebling, N.J. R5	9.60
S. Chicago, Ill. R2	9.30
S. SanFrancisco C10	10.25
SparrowsPt., Md. B2	9.40
Struthers, O. Y1	9.30
Trenton, N.J. A7	9.60
Waukegan, Ill. A7	9.30
Worcester, A7, J4, T6	9.60

WIRE, Fine & Weaving (8" Coils)

Alton, Ill. L1	15.80
Bartonville, Ill. K4	15.70
Buffalo W12	15.60
Chicago W13	15.60
Cleveland A7	15.60
Crawfordsville, Ind. M8	15.70
Fostoria, O. S1	15.60
Houston S5	15.85
Jacksonville, Fla. M8	15.95
Johnstown, Pa. B2	15.60
KansasCity, Mo. S5	15.85
Kokomo, Ind. C16	15.60
Minnequa, Colo. C10	15.85
Monessen, Pa. P7, P16	15.60
Muncie, Ind. I-7	15.80
Palmer, Mass. W12	15.90
S. SanFrancisco C10	16.45
Waukegan, Ill. A7	15.60
Worcester, Mass. A7, T6	15.90

ROPE WIRE

Bartonville, Ill. K4	12.75
Buffalo W12	12.75
Fostoria, O. S1	12.75
Johnstown, Pa. B2	12.75
Monessen, Pa. P7	12.75
Muncie, Ind. I-7	12.95
Palmer, Mass. W12	13.05
Portsmouth, O. P12	12.75
Roebling, N.J. R5	13.05
SparrowsPt., Md. B2	12.85
Struthers, O. Y1	12.75
Worcester, Mass. J4	13.05

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Tire Bead

Bartonville,Ill. K4	16.55
Monessen,Pa. P16	16.55
Roebling,N.J. R5	17.05

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	11.65
Baltimore T6	11.95
Boston T6	11.95
Buffalo W12	11.65
Chicago W13	11.75
Cleveland A7	11.65
Crawfordsville,Ind. M8	11.65
Dover,O. G6	11.65
Fostoria,O. S1	11.95
FranklinPark,Ill. T6	11.75
Kokomo,Ind. C16	11.65
Massillon,O. R8	11.65
Milwaukee C23	11.85
Monessen,Pa. P7, P16	11.65
Palmer,Mass. W12	11.95
Pawtucket,R.I. N8	11.95
Philadelphia P24	11.95
Riverdale,Ill. A1	11.75
Rome,N.Y. R6	11.65
Sharon,Pa. S3	11.65
Trenton,N.J. R5	11.95
Warren,O. B9	11.65
Worcester,Mass. A7, T6	11.95

NAILS, Stock — Col.

AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston,Tex. S5	178
Jacksonville,Fla.(20) M8	184
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	173
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7	$8.95

NAILS, Cut (100 lb keg)
To Dealers (33)

Conshohocken,Pa. A3	$9.80
Wheeling,W.Va. W10	9.80

POLISHED STAPLES — Col.

AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. M8	177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Jacksonville,Fla.(20) M8	186
Johnstown,Pa. B2	175
Joliet,Ill. A7	175
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(Per 97 lb Net Box)
Coil No. 3150

AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. M8	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. M8	10.82
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill(37) N15	10.36

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. M8	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville,Fla. M8	11.16
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S.Chicago,Ill. R2	10.60
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(37) N15	10.70

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. M8	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. M8	11.21
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill.(37) N15	10.75

BALE TIES, Single Loop — Col.

AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	219
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214
Williamsport,Pa. S19	175

FENCE POSTS

Birmingham C15	171
ChicagoHts.,Ill. C2, I-2	172
Duluth A7	172
Franklin,Pa. F5	172
Huntington,W.Va. C15	171
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	177
Sterling,Ill.(1) N15	172
Tonawanda,N.Y. B12	174

WIRE, Barbed — Col.

AlabamaCity,Ala. R2	193**
Aliquippa, Pa. J5	190§
Atlanta A11	198*
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston,Tex. S5	198**
Jacksonville,Fla. M8	203
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196*
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213**
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198§

WOVEN FENCE, 9-15 Ga. — Col.

Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-14½ga.J5	190§
Atlanta A11	192*
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston,Tex. S5	192**
Jacksonville,Fla. M8	197
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192§

WIRE (16 gage)	An'ld Stone	Galv. Stone
Ala.City,Ala.R2	17.15	18.70**
Aliq'ppa,Pa. J5	17.15	18.95
Bartonville K4	17.25	19.05
Cleveland A7	17.15	....
Crawf'dsville M8	17.25	19.05
Fostoria,O. S1	17.65	19.20†
Houston S5	17.40	18.95**
Jacksonville M8	17.50	19.30
Johnstown B2	17.15	18.95§
Kan.City,Mo. S5	17.40	....
Kokomo C16	17.25	18.80†
Minnequa C10	17.40	18.95**
P'lm'r,Mass.W12	17.45	19.00†
Pitts.,Calif. C11	17.50	19.05†
SparrowsPt. B2	17.25	19.05§
Sterling(37) N15	17.25	19.05§
Waukegan A7	17.15	18.70†
Worcester A7	17.45	....

WIRE, Merchant Quality

(6 to 8 gage)	An'ld Stone	Galv. Stone
Ala.City,Ala. R2	8.65	9.20**
Aliquippa J5	8.65	9.325§
Atlanta(48) A11	8.75	9.425*
Bartonville(48) K4	8.75	9.425
Buffalo W12	8.65	9.20†
Cleveland A7	8.65	....
Crawfordsville M8	8.75	9.425
Donora,Pa. A7	8.65	9.20†
Duluth A7	8.65	9.20†
Fairfield T2	8.65	9.20†
Houston(48) S5	8.90	9.45**
Jacks'ville,Fla. M8	9.00	9.675
Johnstown B2(48)	8.65	9.325§
Joliet,Ill. A7	8.65	9.20†
Kans.City(48) S5	8.90	9.45**
Kokomo C16	8.75	9.30†
LosAngeles B3	9.60	10.275§
Minnequa C10	8.90	9.45**
Monessen P7(48)	8.65	9.25*
Palmer,Mass. W12	8.95	9.50†
Pitts.,Calif. C11	9.60	10.15†
Rankin,Pa. A7	8.65	9.20†
S.Chicago R2	8.65	9.20**
S.SanFran. C10	9.60	10.15**
Spar'wsPt.B2(48)	8.75	9.425§
Sterling(48) N15	8.90	9.575§
Sterling(1)(48)	8.80	9.475§
Struth'rs,O.(48) Y1	8.65	9.30‡
Worcester,Mass.A7	8.95	9.50†

Based on zinc price of: *13.50c., †5c. §10c. ‡Less than 10c. ††10.50c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

BOLTS

Carriage, Machine Bolts
Full Size Body (cut thread)
½ in. and smaller:

6 in. and shorter	49.0
Longer than 6 in.	39.0
⅝ in. thru 1 in.:	
6 in. and shorter	39.0
Longer than 6 in.	35.0
1⅛ in. and larger:	
All lengths	35.0

Undersized Body (rolled thread)
½ in. and smaller:

6 in. and shorter	49.0

Carriage,Machine, Lag Bolts
Hot Galvanized:
½ in. and smaller:

6 in. and shorter	29.0
Longer than 6 in.	15.0
⅝ in. and larger:	
All lengths	12.0

Lag Bolts (all diam.)

6 in. and shorter	49.0
Longer than 6 in.	39.0

Plow and Tap Bolts
½ in. and smaller by 6 in. and shorter 49.0
Larger than ½ in. or longer than 6 in. 39.0
Blank Bolts 39.0
Step, Elevator, Tire Bolts 49.0
Stove Bolts, Slotted:

⅛ to ¼-in. incl., 3 in. and shorter	55.0
⅛ to ½ in., inclusive	55.0

NUTS
Reg. & Heavy Square Nuts:
All sizes 55.5
Square Nuts, Reg. &
Heavy, Hot Galvanized:
All sizes 41.0
Hex Nuts, Reg. &
Heavy, Hot Pressed:

¾ in. and smaller	60.5
⅞ in. to 1 in., incl.	55.5
1⅛ in. to 1½ in., incl.	58.5
1⅝ in. and larger	53.5

Hex Nuts, Reg. &
Heavy, Cold Punched:

¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, All Types,
Hot Galvanized:

¾ in. and smaller	46.5
⅞ in. to 1 in., incl.	41.5
1⅛ in. to 1½ in., incl.	46.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

¾ in. and smaller, incl.	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, Finished (Incl. Slotted and Castellated):

1 in. and smaller	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅝ in. and smaller	60.5
¾ in. to 1 in., incl.	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)
Hex Head Capscrews, Coarse or Fine Thread, Bright:
6 in. and shorter:

⅝ in. and smaller	40.0
¾, ⅞, and 1 in. diam.	22.0
Longer than 6 in.:	
⅝ in. and smaller	8.0
¾, ⅞, and 1 in. diam.	+6.0

High Carbon, Heat Treated:
6 in. and shorter:

⅝ in. and smaller	26.0
¾, ⅞, and 1 in. diam.	3.0

Longer than 6 in.:

⅝ in. and smaller	+13.0
¾, ⅞, and 1 in. diam.	+32.0

Flat Head Capscrews:
¾ in. and smaller +76.0
Setscrews, Square Head, Cup Point, Coarse Thread:
Through 1 in. diam.:
6 in. and shorter... Net
Longer than 6 in... +23

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.
Structural ½ in., larger 12.25
7/16 in. under: List less 19%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	25.98	23.54
1¼	13	....	30.78	23.36
1½	13	29.03	34.01	25.83
1¾	13	34.29	40.18	30.51
2	13	38.44	45.05	34.20
2¼	13	43.29	50.75	38.52
2½	12	46.99	55.06	41.81
2½	12	51.76	60.65	46.05
2¾	12	56.04	65.67	49.88
3	12	59.76	70.03	53.19

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60 lb Under
RAILS				
Bessemer,Pa. U5	5.525	5.425	....	6.50
Ensley,Ala. T2	5.525	5.425	....	6.50
Fairfield,Ala. T2	....	....	....	6.50
Gary,Ind. U5	5.525	5.425	....	....
Huntington,W.Va. C15	....	....	....	6.50
Indiana Harbor,Ind. I-2	5.525	5.425	5.475	....
Johnstown,Pa. B2	....	....	....(16)	6.50
Lackawanna,N.Y. B2	5.525	5.425	....	6.50
Minnequa,Colo. C10	5.525	5.425	....	7.00
Steelton,Pa. B2	5.525	5.425	....	....
Williamsport,Pa. S19	....	....	....	6.50

TIE PLATES

Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.60
Ind.Harbor,Ind. I-2	6.60
Lackawanna,N.Y. B2	6.60
Minnequa,Colo. C10	6.60
Seattle B3	6.75
Steelton,Pa. B2	6.60
Torrance,Calif. C11	6.75

JOINT BARS

Bessemer,Pa. U5	6.975
Fairfield,Ala. T2	6.975
Ind.Harbor,Ind. I-2	6.975
Joliet,Ill. U5	6.975
Lackawanna,N.Y. B2	6.975
Minnequa,Colo. C10	6.975
Steelton,Pa. B2	6.975

AXLES

Ind.Harbor,Ind. S13	8.775
Johnstown,Pa. B2	8.775

TRACK BOLTS, Untreated

Cleveland R2	14.75
KansasCity,Mo. S5	14.75
Lebanon,Pa. B2	14.75
Minnequa,Colo. C10	14.75
Pittsburgh P14	14.75
Seattle B3	15.25

SCREW SPIKES

Lebanon,Pa. B2	14.50

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. I-2, Y1	9.75
KansasCity,Mo. S5	9.75
Lebanon,Pa. B2	9.75
Minnequa,Colo. C10	9.75
Pittsburgh J5	9.75
Seattle B3	10.25
S.Chicago,Ill. R2	9.75
Struthers,O. Y1	9.75
Youngstown R2	9.75

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 13 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ¾" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) Plus 1c per 100 lb.
(21) New Haven, Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.15c, finer than 15 Ga.
(25) Bar mill bands.
(26) Delivered in mill zone, 6.045c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.60c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(45) 0.022 in. and lighter, over 0.022", 8.20c.
(46) Special quality.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 8.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Ambridge, Pa. N2	+9.25	....	+2.75	....	+0.25	....	1.25	....	1.25	....	1	....	3.5	....
Lorain, O. N3	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Youngstown Y1	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

ELECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Alton, Ill. L1	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Benwood, W. Va. W10	4.5	+22	+7.5	+31	+18	+39.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Butler, Pa. F6	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Fairless, Pa. N3	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Fontana, Calif. K1	....	....	....	....	....	....	+8.25	+23.5	+5.25	+19.5	+1.75	+15	0.75	+14.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	4.25	+11	7.25	+7	10.75	+2.5	13.25	+3.25
Lorain, O. N3	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sharon, Pa. S4	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sparrows Pt., Md. B2	3.5	+23	8.5	+32	+19	+40.5	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Wheatland, Pa. W9	5.5	+21	+6	+30	+17	+38.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Youngstown R2, Y1	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Alton, Ill. L1	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	....	....	....	....
Benwood, W. Va. W10	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Etna, Pa. N2	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Fairless, Pa. N3	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Fontana, Calif. K1	1.25	+13.25	1.75	+12.75	3.25	+13	3.25	+13	+7.25	+24	+7.25	+24
Indiana Harbor, Ind. Y1	13.75	+0.75	14.25	+0.25	15.75	+0.5	15.25	+0.5	5.25	+11.5	5.25	+11.5
Lorain, O. N3	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sharon, Pa. M6	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sparrows Pt., Md. B2	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Wheatland, Pa. W9	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Youngstown R2, Y1	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	Rerolling Ingot	Rerolling Slabs	Forging Billets	H.R. Strip	Wire Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	....	42.00	44.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	45.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	46.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	47.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	49.50	57.00	57.00
303	....	32.00	41.00	....	45.50	48.00	50.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	50.75	55.50	55.50
304L	....	....	48.25	51.50	53.00	55.50	58.50	63.25	63.25
305	28.50	36.75	42.50	47.50	45.25	47.75	51.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	60.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	71.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	92.75	96.75	96.75
314	....	....	....	....	86.50	....	92.75	....	104.50
316	39.75	49.50	62.25	69.25	69.25	73.00	76.75	81.50	81.50
316L	....	....	70.00	76.50	77.00	80.75	84.50	89.25	89.25
317	48.00	60.00	76.75	88.25	86.25	90.75	93.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	59.75	65.50	65.50
330	....	....	118.75	....	132.00	138.50	105.50	108.00	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25	79.25
403	....	....	32.00	....	35.75	37.75	40.25	48.25	48.25
405	19.50	25.50	29.75	36.00	33.50	35.25	37.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	36.25	48.25	48.25
420	....	33.50	34.25	41.75	39.25	41.25	45.25	62.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	36.75	51.75	51.75
431	....	28.75	37.75	....	42.00	44.25	46.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	47.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Div., H. K. Porter Co. Inc.; Alloy Tube Div., Carpenter Steel Co.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Charter Wire Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Elwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Jones & Laughlin Steel Corp.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McInnes Steel Co.; McLouth Steel Corp.; Metal Forming Corp.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Stainless Steel Div., Jones & Laughlin Steel Corp.; Superior Steel Corp.; Superior Tube Co.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

Stainless	Plates 5%	Plates Carbon Base 10%	Plates Carbon Base 15%	Plates Carbon Base 20%	Sheets Carbon Base 20%
302	....	....	....	....	37.50
304	34.70	37.95	42.25	46.70	40.00
304L	36.90	40.55	45.10	49.85	....
316	40.35	44.40	49.50	54.50	58.75
316L	45.05	49.35	54.70	60.10	....
316 Cb	47.30	53.80	61.45	69.10	....
321	36.60	40.05	44.60	49.30	47.25
347	38.25	42.40	47.55	52.80	57.00
405	28.60	29.85	33.35	36.85	....
410	28.15	29.55	33.10	36.70	....
430	28.30	29.80	33.55	37.25	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....
Copper*	....	....	....	....	46.00

	Strip, Carbon Base —Cold Rolled— 10%	Strip, Carbon Base —Cold Rolled— Both Sides
Copper*	33.95	40.25

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.305	Cr Hot Work	0.510
Extra Carbon	0.360	W-Cr Hot Work	0.500
Special Carbon	0.475	V-Cr Hot Work	0.475
Oil Hardening	0.475	Hi-Carbon-Cr	0.830

Grade by Analysis (%) W	Cr	V	Co	Mo		$ per lb
20.25	4.25	1.6	12.25	....	....	4.285
18.25	4.25	1	4.75	....	....	2.500
18	4	2	9	....	....	2.870
18	4	2	....	....	....	1.960
18	4	1	....	....	....	1.795
9	3.5	....	....	....	....	1.395
13.5	4	3	....	....	....	2.060
13.75	3.75	2	5	....	....	2.440
6.4	4.5	1.9	....	5	....	1.300
6	4	3	....	6	....	1.545
1.5	4	1	....	8.5	....	1.155

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal transportation tax.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
AlabamaCity,Ala. R2	62.00	62.50	....	....
Birmingham R2	62.00	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala. W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	....	66.50	....
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	68.62	69.12	69.12	69.62
Muskegon,Mich., deld.	....	74.12	74.12	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,O., deld.	69.12	69.62	69.62	70.12
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	66.50	67.00	67.50	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
New York, deld.	....	75.10	75.60	....
Newark,N.J., deld.	72.29	72.79	73.29	73.79
Philadelphia, deld.	70.01	70.51	71.01	71.59
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Youngstown District				
Hubbard,O. Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,O., deld.	70.90	....	71.40	71.90
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,O. I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.54	73.04	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%; $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,O. I-3, J1	78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Troy,N.Y. R2 (Phos. 0.035% max)	74.00
Philadelphia, deld.	82.27
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Chattanooga, Houston, Seattle no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Galv. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[3]		Carbon	Floor
Atlanta	8.59§	9.86§	....	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.28	8.88	9.76	....	8.76	9.06	11.34#	15.18	9.19	8.66	10.14
Birmingham	8.18	9.45	11.07	....	8.23	8.60	10.57	....	8.64	8.56	10.70
Boston	9.38	10.44	11.45	....	9.42	9.73	12.90#	15.28	9.63	9.72	11.20
Buffalo	8.40	9.00	10.07	....	8.50	8.80	10.90#	15.00	8.90	8.90	10.45
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.20	9.45	10.00	....	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati	8.34	9.48	10.05	....	8.54	8.92	9.31	14.96	9.18	8.93	10.21
Cleveland	8.18	9.45	9.95	....	8.33	8.69	10.80#	14.74	9.01	8.79	10.11
Denver	9.38	11.75	....	....	9.41	9.78	11.10	....	9.82	9.74	11.06
Detroit	8.43	9.70	10.35	....	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa.	8.20	9.45	9.95[10]	....	8.50	8.75	9.05[10]	....	9.00	8.85	10.10
Houston	8.45	9.75	8.45	....	8.60	9.05	11.10	....	9.10	9.05	10.30
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	9.50	10.75	11.65	....	9.55	9.55	12.75	16.00	9.60	9.55	11.70
Milwaukee	8.33	9.58	10.13	....	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill.	8.55	9.80	10.35	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	....	9.31	9.57	12.76#	15.09	9.35	9.43	10.71
Norfolk, Va.	8.05	....	....	....	8.55	8.60	10.80	....	8.95	8.45	9.95
Philadelphia	8.00	8.90	9.87	51.94	8.69	8.65	11.51#	15.01	8.50	8.77	9.77**
Pittsburgh	8.18	9.45	10.35	50.00	8.33	8.60	10.80#	14.65	8.64	8.56	9.88
Portland, Oreg.	8.50	11.20	11.55	57.20	11.35‡‡	8.65	14.65#	15.95	9.60	8.30	12.50
Richmond, Va.	8.45	....	10.40	....	9.15	9.15	....	....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.36	....	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul	8.79	10.04	10.61	....	8.84	9.36	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	54.85	9.45	9.70	13.00	16.00	9.50	9.60	12.00
Seattle	9.95	11.15	12.00	57.20	10.00	10.80	14.05	16.35	9.80	9.70	12.10
Spokane, Wash.	9.95	11.15	12.00	....	10.00	10.10	14.05	17.20	9.80	9.70	12.10
Washington	8.48	9.58	....	....	9.06	9.15	9.73	....	9.35	8.86	10.36

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡over 4 in.; §§over 3 in.; #1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; [3]—400 to 9999 lb; [8]—1000 to 1999 lb; [8]—2000 to 3999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., $135; Salina, Pa., $140; Niles, O., $138; Cutler, Utah, $165.

Super-Duty: Ironton, O., Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Pa., New Savage, Md., St. Louis, $175; Stevens Pottery, Ga., $185; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, O., Hawstone, Pa., $150; Warren, Niles, Windham, O., Hays, Latrobe, Morrisville, Pa., $155; E. Chicago, Ind., Joliet, Rockdale, Ill., $160; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, O., Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $160; E. Chicago, Ind., $167; Curtner, Calif., $182.

Silica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, O., $96.75; Clearfield, Pa., Portsmouth, O., $102.

High-Alumina Brick (per 1000)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $238; Philadelphia, Clearfield, Pa., $230; Orviston, Pa., $245.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $298; Philadelphia, Clearfield, Orviston, Pa., $305.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $338; Philadelphia, Clearfield, Orviston, Pa., $345.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, O., $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.

Magnesite (per net ton)

Domestic, dead-burned, bulk ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅝ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-41; 70%, $36.40; 60%, $33-36.50. Imported, net tons, f.o.b. cars point of entry duty paid, metallurgical grade: European, $33-34; Mexican, all-rail, duty paid, $25.25-25.75; barge, Brownsville, Tex., $27.25-27.75.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: Deld. east of Mississippi River, ocean bags 23,000 lb and over.. F.o.b. Riverton or Camden, N. J., west of Mississippi River.	10.50 9.50
Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23 000 lb and over F.o.b. Riverton, N. J., west of Mississippi River	10.50 9.50
Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ¼ in. x 1.3 in.	28.00
Annealed, 99.5% Fe..	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)..	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	
Aluminum: Atomized, 500 lb drum, frght allowed Carlots	39.50
Ton lots	41.50
Antimony, 500 lb lots	42.00*
Brass, 5000-lb lots	31.30-38.40†
Bronze, 5000-lb lots	48.10-52.70†
Copper: Electrolytic	14.25*
Reduced	14.25*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel unannealed	$1.15
Nickel-Silver, 5000-lb lots	49.20-61.30†
Phosphor-Copper, 5000-lb lots	59.80
Copper (atomized) 5000-lb lots	40.30-48.80†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.02
Stainless Steel, 316	$1.20
Tin	14.50*
Zinc, 5000-lb lots	17.50-30.70†
Tungsten: Melting grade, 99% 60 to 2000 mesh: 1000 lb and over Less than 1000 lb	Dollars 3.15 3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Length	Per 100 lb
2	24	$69.75
2½	30	39.25
3	40	37.00
4	40	35.00
5⅛	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305..	$6.30	$6.25	$6.25	$6.50
Bar Size Angles	6.62	6.57	6.57	6.75
Structural Angles	6.62	6.57	6.57	6.75
I-Beams	6.87	6.82	6.82	7.00
Channels	6.87	6.82	6.82	7.00
Plates (basic bessemer)	8.35	8.30	8.30	8.60
Sheets, H.R.	8.25	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	9.00	8.95	8.95	9.25
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	26.79	26.67	26.67	27.36
Barbed Wire (†)	6.95	6.95	6.95	7.40
Merchant Bars	6.87	6.82	6.82	7.22
Hot-Rolled Bands	7.20	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.73	6.73	6.73	7.13
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails (§)	8.38	8.38	8.38	8.58

†Per 82 lb, net, reel. §Per 100-lb kegs, 20d nails and heavier.

Ores

Lake Superior Iron Ore

(Prices effective for the 1957 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos.	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	25.00-27.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	27.00-27.50
N. African hematite (spot)	nom.
Brazilian iron ore, 68-69%	30.00

Tungsten Ore

Net ton, unit, before duty

Foreign wolframite, good commercial quality	13.75-14.25
Domestic, concentrates mine	55.00

Manganese Ore

Mn 46-48%, Indian (export tax included), $1.35-$1.45 per long ton unit, c.i.f. U. S. ports, duty for buyer's account: other than Indian, $1.35-$1.45; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian	
48% 3:1	$55.00-58.00
48% 2.8:1	52.00-55.00
48% no ratio	46.00-48.00
South African Transvaal	
48% no ratio	$40.00-41.00
44% no ratio	30.00-31.00
Turkish	
48% 3:1	$59.00-62.00
Domestic	
Rail nearest seller	
18% 3:1	$39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.18

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

55-60%	$2.90-3.30
60-65%	3.30-3.60

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.25
Saginaw, Mich., deld	33.83
Erie, Pa., ovens	30.50
Everett, Mass., ovens	
New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, O., ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Painesville, O., ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
Neville Island (Pittsburgh), Pa., ovens	29.25
St. Paul, ovens	29.75
Chicago, deld.	33.24
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $4.85 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg.	29.50
Industrial xylene	32.00-34.00
Per ton, bulk, ovens	
Ammonium sulfate	$32.00
Cents per pound, producing point	
Phenol: Grade 1, 15.00; Grade 2-3, 14.50; Grade 4, 16.50; Grade 5, 15.25.	

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Pa.: 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx). Base price per net ton; $245, Johnstown, Duquesne, Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74% respectively.

(Mn 79-81%). Lump $263 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; 500 lb to 1999 lb, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $200 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $225 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.
Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8M x D, 21.25c, per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

Chromium Metal Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ⅛" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si. Packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c; less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 0.75% max Fe, 0.07% max Ca). C.l. lump, bulk, 22.00c per lb of Si. Packed, c.l. 23.65c, ton lot 24.95c, less ton 25.95c. Add 0.5c for max 0.03% Ca grade. Deduct 0.5c for max 1% Fe grade analyzing min 99.75% Si; 0.75c for max 1.25% Fe grades analyzing min 96.75% Si. Spot, add 0.25c.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy; ton lot, packed, 11.8c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Bortam: (B 1.5-1.9%). Ton lot, 45c per lb; less than ton lot, 50c per lb.

Carbortam: (1 to 2%). Contract, lump, carload 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3⅝ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.76c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags, 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l. bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l. bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l. pallets 9.65c; 2000 lb to c.l. bags 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per pound of Mo contained, f.o b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.95 per lb of contained W; 2000 lb W to 5000 lb W, $3.05; less than 2000 lb W, $3.17. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Contract, ton lot 2" x D, $4.90 per lb of contained Cb. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $4.25 per lb of contained Cb plus Ta, delivered; less ton lot $4.30.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5.7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 5: (Si 48-52%, Ca 5.7%, Ti 9-11%). C.l. packed, 19c per lb of alloy, ton lot 20.15c; less ton lot 21.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.1c per lb of alloy; ton lot 19.55c; less ton lot 20.8c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c, less than 2000 lb 21c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carload, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $110 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa., $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

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BY ALLEN G. GRAY, Technical Editor, STEEL Magazine.

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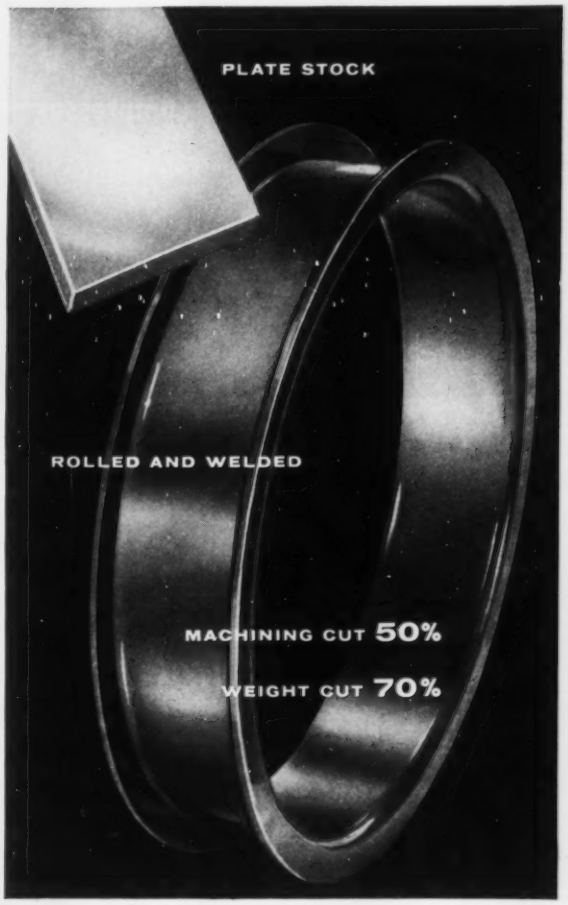

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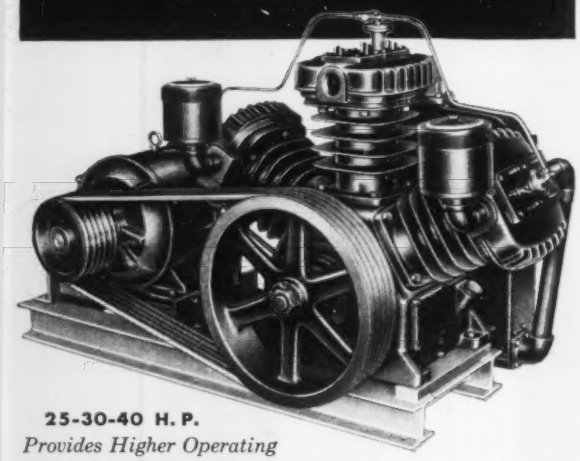

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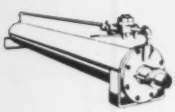

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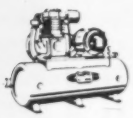

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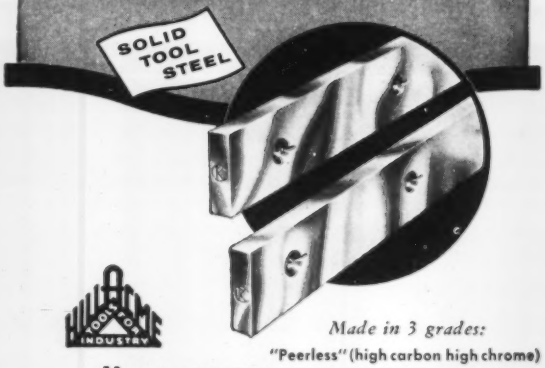

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Slack Demand Pushing Scrap Down

Prices continue to nosedive with mills showing no interest in offerings. STEEL's composite on prime open hearth grade drops another $1.67 a ton to $37.83

Scrap Prices, Page 134

Pittsburgh—Most leading grades of scrap fell $1 to $2 last week, in a decline which extended to railroad material. Due to a continued lack of demand, market observers now think a buyer could obtain No. 1 heavy melting at about $39, or $2 below the previous estimate. The only important mill buying locally on the open market in the past month has suspended purchases for a brief period. Railroad grades are off $2 to $3 on recent lists. Cast iron grades are steady.

Chicago—Prices on the leading grades of scrap have declined another $2 to $4 a ton, but there are some indications that a leveling off is underway. Mill buying is at a standstill, and little activity in this direction is anticipated the remainder of this month. Sole activity is the filling of outstanding orders by brokers. Market prices are the reflection of broker-dealer transactions. Failure of the steelmaking rate to rise, and adequacy of scrap combine to depress the market. Prices are at their lowest point in about two years.

Philadelphia—Steel scrap prices continue to decline under generally light trading. No. 1 heavy melting is holding at $37.50, delivered; No. 2 heavy melting at $33.50; No. 1 bundles and No. 1 busheling at $37.50-$38.50, and No. 2 bundles at $27.50. Electric furnace bundles are unchanged.

In the absence of an important test, turnings are off nominally $1 a ton with short shoveling turnings quoted $25, delivered, machine shop turnings, $22, and heavy turnings $34. Mixed borings and turnings are off similarly to $23. Couplers, springs, and wheels are down $2 at $56, delivered, but prices on rail crops, 2-ft and under, and on low phos structurals and plates are steady.

In the cast scrap sector of the market, heavy breakable is off $1 at $42, and drop broken machinery is down 50 cents at $51-$52.

New York—Slack domestic demand and easing in the outlook for export trading are causing brokers to further reduce their buying prices. They have marked down offerings $2 a ton on No. 1 heavy melting and No. 1 bundles to $37-$38, and similarly on No. 2 heavy melting to $32-$33. No. 2 bundles have been reduced $1 a ton, brokers now offering $25-$26.

Machine shop turnings are off $1 to $12-$13. Mixed borings and turnings are unchanged at $14-$15, and short shoveling turnings are $1 higher at $16-$17, the only increase in the entire list. Low phos is nominally unchanged.

No. 1 cupola and heavy breakable cast are steady, but unstripped motor blocks are lower at $34-$35.

Weakness still dominates nickel

(*Please turn to Page* 139)

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Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL, Oct. 16, 1957. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Oct. 16	$37.83
Oct. 9	39.50
Sept. Avg.	47.73
Oct. 1956	57.27
Oct. 1952	43.00

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	*38.00-39.00*
No. 2 heavy melting	*33.00-34.00*
No. 1 factory bundles	*43.00-44.00*
No. 1 dealer bundles	*38.00-39.00*
No. 2 bundles	*31.00-32.00*
No. 1 busheling	*38.00-39.00*
Machine shop turnings	*20.00-21.00*
Mixed borings, turnings	*20.00-21.00*
Short shovel turnings	*23.00-24.00*
Cast iron borings	*23.00-24.00*
Cut structurals:	
2 ft. and under	45.00-46.00
3 ft lengths	44.00-45.00
Heavy turnings	36.00-37.00
Punchings & plate scrap	44.00-45.00
Electric furnace bundles	44.00-45.00

Cast Iron Grades

No. 1 cupola	44.00-45.00
Stove plate	38.00-39.00
Unstripped motor blocks	31.00-32.00
Clean auto cast	47.00-48.00
Drop broken machinery	56.00-57.00

Railroad Scrap

No. 1 R.R. heavy melt.	*41.00-42.00*
Rails, 2 ft and under	*65.00-66.00*
Rails, 18 in. and under	*66.00-67.00*
Angles, splice bars	*55.00-56.00*
Rails, rerolling	*65.00-66.00*

Stainless Steel Scrap

18-8 bundles & solids	*210.00-215.00*
18-8 turnings	*115.00-120.00*
430 bundles & solids	*95.00-100.00*
430 turnings	*65.00-70.00*

CLEVELAND

No. 1 heavy melting	*34.00-35.00*
No. 2 heavy melting	*27.00-28.00*
No. 1 factory bundles	*37.00-38.00*
No. 1 bundles	*34.00-35.00*
No. 2 bundles	*24.00-25.00*
No. 1 busheling	*34.00-35.00*
Machine shop turnings	14.00-15.00
Short shovel turnings	18.00-19.00
Mixed borings, turnings	18.00-19.00
Cast iron borings	18.00-19.00
Cut foundry steel	*36.00-37.00*
Cut structurals, plates 2 ft and under	*41.00-42.00*
Low phos. punchings & plate	*35.00-36.00*
Alloy free, short shovel turnings	24.00-25.00
Electric furnace bundles	*35.00-36.00*

Cast Iron Grades

No. 1 cupola	44.00-45.00
Charging box cast	36.00-37.00
Heavy breakable cast	34.00-35.00
Stove plate	42.00-43.00
Unstripped motor blocks	29.00-30.00
Brake shoes	33.00-34.00
Clean auto cast	44.00-45.00
Burnt cast	31.00-32.00
Drop broken machinery	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	39.00-40.00
R.R. malleable	55.00-56.00
Rails, 2 ft and under	62.00-63.00
Rails, 18 in. and under	63.00-64.00
Rails, random lengths	57.00-58.00
Cast steel	54.00-55.00
Railroad specialties	54.00-55.00
Uncut tires	49.00-50.00
Angles, splice bars	54.00-55.00
Rails, rerolling	62.00-63.00

Stainless Steel
(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	215.00-220.00
18-8 turnings	115.00-120.00
430 clips, bundles, solids	75.00-80.00
430 turnings	40.00-50.00

YOUNGSTOWN

No. 1 heavy melting	*36.00-37.00*
No. 2 heavy melting	*31.00-32.00*
No. 1 bundles	*36.00-37.00*
No. 2 bundles	*28.00-29.00*
No. 1 busheling	*36.00-37.00*
Machine shop turnings	15.00-16.00
Short shovel turnings	19.00-20.00
Cast iron borings	19.00-20.00
Low phos.	*39.00-40.00*
Electric furnace bundles	*39.00-40.00*

Railroad Scrap

No. 1 R.R. heavy melt.	41.00-42.00

CHICAGO

No. 1 heavy melt., indus.	*39.00-40.00*
No. 1 hvy melt., dealer	*35.00-36.00*
No. 2 heavy melting	*33.00-34.00*
No. 1 factory bundles	*40.00-41.00*
No. 1 dealer bundles	36.00-37.00
No. 2 bundles	*23.00-24.00*
No. 1 busheling, indus.	*39.00-40.00*
No. 1 busheling dealer	*35.00-36.00*
Machine shop turnings	*18.00-19.00*
Mixed borings, turnings	*20.00-21.00*
Short shovel turnings	*20.00-21.00*
Cast iron borings	*20.00-21.00*
Cut structurals, 3 ft.	*42.00-43.00*
Punchings & plate scrap	*43.00-44.00*

Cast Iron Grades

No. 1 cupola	38.00-39.00
Stove plate	36.00-37.00
Unstripped motor blocks	30.00-31.00
Clean auto cast	43.00-44.00
Drop broken machinery	43.00-44.00

Railroad Scrap

No. 1 R.R. heavy melt.	*41.00-42.00*
R.R. malleable	*49.00-50.00*
Rails, 2 ft and under	*52.00-53.00*
Rails, 18 in. and under	*53.00-54.00*
Angles, splice bars	*49.00-50.00*
Axles	*55.00-56.00*
Rails, rerolling	*55.00-56.00*

Stainless Steel Scrap

18-8 bundles & solids	*205.00-215.00*
18-8 turnings	*105.00-115.00*
430 bundles & solids	80.00-90.00
430 turnings	50.00-55.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	26.00-27.00
No. 1 bundles	31.00-32.00
No. 2 bundles	*23.00-24.00*
No. 1 busheling	*29.00-30.00*
Machine shop turnings	*13.00-14.00*
Mixed borings, turnings	*14.00-15.00*
Short shovel turnings	*15.00-16.00*
Punchings & plate scrap	32.00

Cast Iron Grades

No. 1 cupola	37.00
Stove plate	32.00
Charging box cast	31.00
Heavy breakable	31.00
Unstripped motor blocks	18.00
Clean auto cast	38.00
Malleable	39.00†

†Nominal

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	*39.00*
No. 2 heavy melting	*37.00*
No. 1 bundles	*39.00*
No. 2 bundles	*29.00*
No. 1 busheling	*39.00*
Machine shop turnings	*17.00*
Short shovel turnings	*19.00*

Cast Iron Grades

No. 1 cupola	45.00
Charging box cast	*37.00*
Heavy breakable cast	*37.00*
Unstripped motor blocks	*37.00*
Brake shoes	40.00
Clean auto cast	46.00
Stove plate	*39.00*

Railroad Scrap

No. 1 R.R. heavy melt.	42.00
Rails, 18 in. and under	*59.00*
Rails, random lengths	*52.00*
Rails, rerolling	*60.00*
Angles, splice bars	*52.00*

PHILADELPHIA

No. 1 heavy melting	*37.50*
No. 2 heavy melting	*33.50*
No. 1 bundles	*37.50-38.50*
No. 2 bundles	*27.50*
No. 1 busheling	*37.50-38.50*
Electric furnace bundles	45.00
Mixed borings, turnings	*23.00†*
Short shovel turnings	*25.00†*
Machine shop turnings	*22.00†*
Heavy turnings	*34.00†*
Structurals & plate	46.00-48.00
Couplers, springs, wheels	*56.00*
Rail crops, 2 ft & under	68.00-69.00

Cast Iron Grades

No. 1 cupola	43.00
Heavy breakable cast	*42.00*
Malleable	59.00
Drop broken machinery	*51.00-52.00*

†Nominal

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*37.00-38.00*
No. 2 heavy melting	*32.00-33.00*
No. 1 bundles	*37.00-38.00*
No. 2 bundles	*25.00-26.00*
Machine shop turnings	*12.00-13.00*
Mixed borings, turnings	14.00-15.00
Short shovel turnings	*16.00-17.00*
Low phos. (structurals & plate	46.00-47.00†

Cast Iron Grades

No. 1 cupola	39.00-40.00
Unstripped motor blocks	*34.00-35.00*
Heavy breakable	35.00-36.00†

Stainless Steel

18-8 sheets, clips, solids	*175.00-185.00*
18-8 borings, turnings	*75.00-80.00*
430 sheets, clips, solids	55.00-60.00
410 sheets, clips, solids	50.00-55.00

†Nominal

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*33.00-34.00*
No. 2 heavy melting	*29.00-30.00*
No. 1 bundles	35.00-36.00
No. 2 bundles	*33.00-34.00*
No. 1 busheling	*32.00-33.00*
Machine shop turnings	10.00-11.00
Mixed borings, turnings	11.00-12.00
Short shovel turnings	12.00-13.00
No. 1 cast	33.00-34.00
Mixed cupola cast	32.00-33.00
No. 1 machinery cast	38.00-39.00

BUFFALO

No. 1 heavy melting	38.00-39.00
No. 2 heavy melting	34.50-35.50
No. 1 bundles	38.00-39.00
No. 2 bundles	31.50-32.50
No. 1 busheling	38.00-39.00
Mixed borings, turnings	23.00-24.00
Machine shop turnings	21.00-22.00
Short shovel turnings	24.00-25.00
Cast iron borings	23.00-24.00
Low phos.	43.00-44.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	43.00-44.00
No. 1 machinery	47.00-48.00

Railroad Scrap

Rails, random lengths	54.00-55.00
Rails, 3 ft and under	59.00-60.00
Railroad specialties	45.00-46.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	32.00-33.00
No. 1 bundles	36.00-37.00
No. 2 bundles	*27.00-28.00*
No. 1 busheling	36.00-37.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	*21.00-22.00*
Short shovel turnings	22.00-23.00
Cast iron borings	*21.00-22.00*
Low phos. 18 in.	*43.00-44.00*

Cast Iron Grades

No. 1 cupola	*36.00-37.00*
Heavy breakable cast	33.00-34.00
Charging box cast	33.00-34.00
Drop broken machinery	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	*39.00-40.00*
Rails, 18 in. and under	*62.00-63.00*
Rails, random lengths	*54.00-55.00*

BIRMINGHAM

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	*31.00-32.00*
No. 1 bundles	36.00-37.00
No. 2 bundles	*21.00-22.00*
No. 1 busheling	36.00-37.00
Cast iron borings	*23.00-24.00*
Short shovel turnings	*21.00-22.00*
Machine shop turnings	*21.00-22.00*
Bar crops and plates	*41.00-42.00*
Structurals & plate	*41.00-42.00*
Electric furnace bundles	*40.00-41.00*
Electric furnace:	
3 ft and under	*38.00-39.00*
2 ft and under	*39.00-40.00*

Cast Iron Grades

No. 1 cupola	*47.00-48.00*
Stove plate	*46.00-47.00*
Unstripped motor blocks	38.00-39.00
Charging box cast	27.00-28.00
No. 1 wheels	39.00-40.00

Railroad Scrap

No. 1 R.R. heavy melt	39.00-40.00
Rails, 18 in. and under	*51.00-52.00*
Rails, rerolling	*55.00-56.00*
Rails, random lengths	47.00-48.00
Angles, splice bars	*47.00-48.00*

SEATTLE

No. 1 heavy melting	*35.00†*
No. 1 bundles	*33.00†*
No. 2 heavy melting	*33.00†*
No. 2 bundles	*22.00†*
Machine shop turnings	27.00†
Mixed borings, turnings	27.00†
Electric furnace No. 1	*35.00†*

Cast Iron Grades

No. 1 cupola	*35.00†*
Heavy breakable cast	*32.00†*
Unstripped motor blocks	*27.00†*
Stove plate (f.o.b. plant)	*25.00†*

†Nominal

LOS ANGELES

No. 1 heavy melting	44.00
No. 2 heavy melting	42.00
No. 1 bundles	43.00
No. 2 bundles	34.00
Machine shop turnings	31.00
Shoveling turnings	30.00
Cast iron borings	30.00
Cut structurals and plate, 1 ft and under	58.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	54.00-56.00

Railroad Scrap

No. 1 R.R. heavy melt.	44.00

SAN FRANCISCO

No. 1 heavy melting	39.00
No. 2 heavy melting	37.00
No. 1 bundles	38.00
No. 2 bundles	30.00
Machine shop turnings	27.00
Mixed borings, turnings	27.00
Cast iron borings	27.00
Heavy turnings	27.00
Short shovel turnings	27.00
Cut structurals, 3 ft.	50.00

Cast Iron Grades

No. 1 cupola	50.00-52.00
Charging box cast	45.00
Stove plate	46.00
Heavy breakable cast	40.00
Unstripped motor blocks	40.00
Clean auto cast	50.00-52.00
No. 1 wheels	45.00
Drop broken machinery	50.00-52.00

HAMILTON, ONT.

No. 1 heavy melting	38.00
No. 2 heavy melting	33.00
No. 1 bundles	38.00
No. 2 bundles	28.00
Mixed steel scrap	33.00
Mixed borings, turnings	21.00
Busheling, new factory:	
Prepared	38.00
Unprepared	32.00
Short steel turnings	23.00
Rails, rerolling	47.00

Cast Iron Grades†

No. 1 machinery cast	50.00

†F.o.b. Hamilton, Ont.

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Lead Down to 13.5 Cents

Unexpected drop pulls metal down to its lowest quotation since 1954. Custom smelted copper falls to 25.5 cents a pound. Zinc shaky as foreign prices dip

Nonferrous Metal Prices, Pages 138 & 139

LEAD TUMBLED to 13.5 cents a pound on Oct. 14 in a development that took most industry observers by surprise. The price had held steady at 14 cents a pound since June 11.

While no price fluctuation is really unexpected this year, lead had appeared much stronger than some of the other nonferrous metals, copper and zinc in particular. Metalmen had looked for the price to hold until some decision was reached on tariffs. The latest drop will give the industry added ammunition when it presents its case to the Tariff Commission at hearings which begin on Nov. 19.

Quartet—Reasons for the sudden weakness in lead appear to be fourfold: 1. The stock market has slumped sharply recently. 2. Some custom smelters have built up large stocks of concentrates. 3. The British Board of Trade announced it would dispose of 20,000 tons of stockpile lead at a time when some cracks were beginning to be seen in the market. 4. Quotations on the London Metal Exchange fell to where it was profitable to bring foreign lead into the U. S.

Zinc, Too?—The big question now is whether zinc can maintain its 10 cent a pound position. The LME price has been slipping.

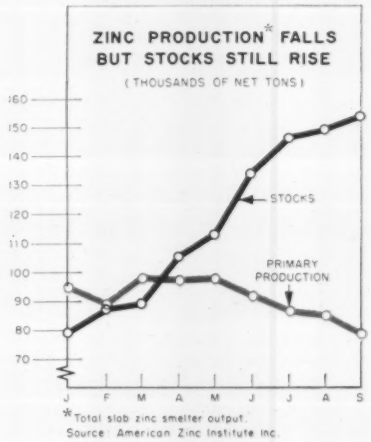
Zinc's big problem still seems to be too much production in the face of mediocre demand. Smelter output of slab zinc has steadily fallen since May, but unsold stocks continue to climb (see chart).

Here's why: Demand has never picked up the momentum it lost in May even though shipments looked brighter when they climbed to 81,049 tons in August. But they slipped back to 72,985 tons in September (the second lowest month of the year) and are about the same this month.

Metalmen are divided on whether prices will fall. But the feeling is strong that the price can't be maintained unless there's some strengthening both here and abroad.

Copper Price Down

Custom smelters cut the price of the red metal by 0.5 cent a pound



to the 25.5 cents a pound mark on Oct. 15. The move came as no surprise to the trade in view of market weaknesses both here and abroad and the recent wave of price shading.

The problem now is whether primary producers can hold at 27 cents a pound. Three factors point to a cut soon: 1. Katanga copper has been reduced to 23.6 cents a pound, c.i.f. New York. 2. The LME was down to 22.91 cents a pound on Oct. 16. 3. Overproduction still continues despite slack demand.

Aluminum Sales Decline

Aluminum sales in the third quarter fell 7 to 8 per cent below the second quarter. But it's hoped increased demand from Detroit will pace a fourth quarter pickup.

One industry source estimates availability in 1957 at around 2.4 million tons (including primary, secondary, and imports) but believes only 2 million tons will be sold. Next year, availability should jump to 2.8 million tons, but demand (including shipments to the U. S.) will still lag by 500,000 tons.

Aluminum looks to the automotive industry as a major customer for its increasing capacity. Producers point out the average 1958 car will use 50 lb of aluminum, compared with 47 lb in 1957 models. Buick says some of its 1958 models take 95 lb. One observer predicts that by 1959 aluminum bumpers will be on 95 per cent of all new cars. Aluminum brake drums and hubcaps are a not too distant possibility, he says.

A minor irritation to producers is the growing amount of low price aluminum sheets being shipped to the U. S. by Italian, English, French, and West German manufacturers. Around 8500 tons of the material has been sold on the New York market in the past year.

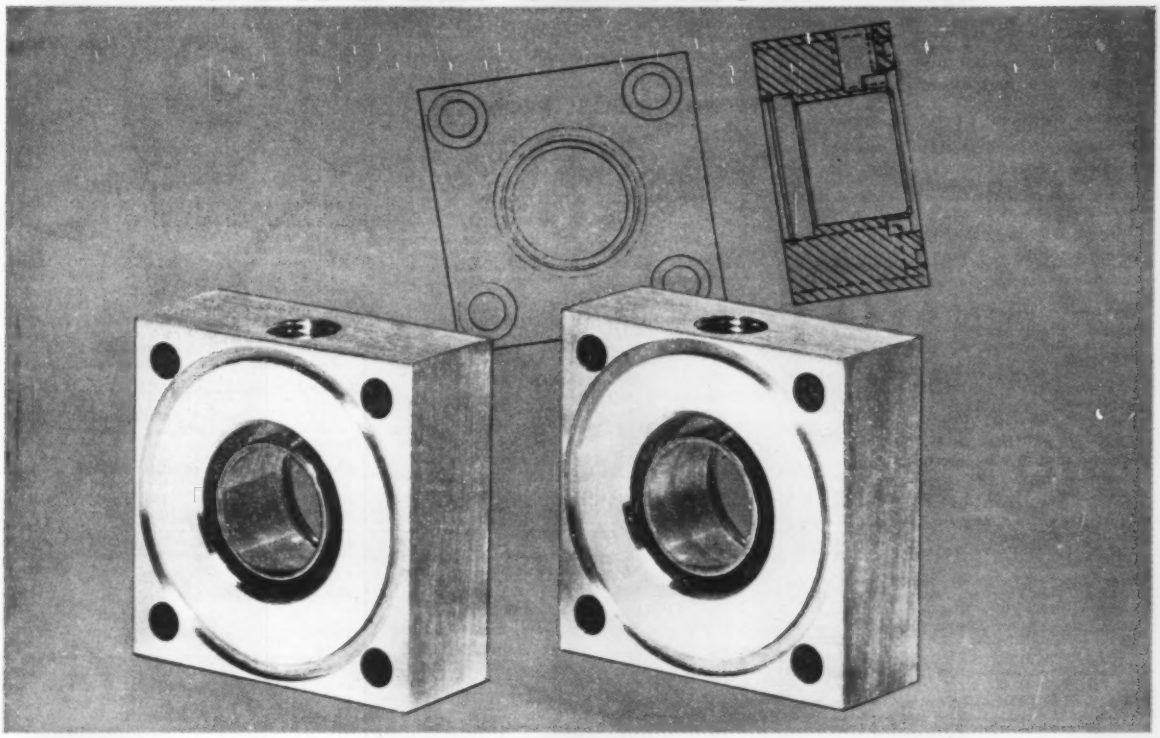
NONFERROUS PRICE RECORD

	Price Oct. 9	Last Change	Previous Price	Sept. Avg	Aug. Avg	Oct., 1956 Avg
Aluminum ..	28.10	Aug. 1, 1957	27.10	28.100	28.100	27.100
Copper	26.00–27.00	Sept. 12, 1957	25.50–27.00	26.469	28.639	38.365
Lead	13.80	June 11, 1957	14.80	13.800	13.800	15.800
Magnesium .	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	64.500
Tin	92.00	Oct. 11, 1957	92.25	93.422	94.259	105.981
Zinc	10.00	July 1, 1957	10.50	10.000	10.000	13.500

Quotations in cents per pound based on: COPPER, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary ingots, 99 + %, deld.; MAGNESIUM, pig, 99.8%, Velasco, Tex.

THEY LOOK ALIKE...

but one takes 1/3 as long to machine with BRIDGEPORT ALUMINUM



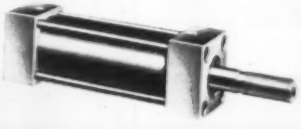
Note close-tolerance finishing on cylinder head. The uniform structure of Bridgeport Aluminum makes machining and drilling fast, easy, economical.

	Steel	Bridgeport Extruded Aluminum, Alloy 6061-T6
MATERIAL		
MACHINING CYCLE	15 MINUTES	LESS THAN 5 MINUTES
OPERATIONS PERFORMED	9	3
TOOL LIFE	MINIMUM	SUBSTANTIAL INCREASE

In planning the production of the front and rear heads of its air-hydraulic cylinders, Alkon Products, Hawthorne, N. J., originally considered machining them from steel. Then the Bridgeport Man arrived with a briefcase full of ideas. Now these parts are machined from Bridgeport Extruded Aluminum bar stock. The comparative story above tells why.

Add these other benefits – the ease of handling the bar stock... the lustrous, sales-appeal of Bridgeport Aluminum... elimination of rust and corrosion problems in inventory and storage... savings in shipping weight and strength of packaging required.

If you have a parts problem that might be solved by aluminum extrusions, let the Bridgeport Man in your locality know about it. He'll be glad to call and give you the benefit of Bridgeport's ideas and experience in aluminum extrusions.



Alkon Products Model "D" Cylinder, with front and rear heads of Bridgeport Extruded Aluminum, exceeds JIC standards for air, water, oil.

For the very newest in

BRASS Bridgeport CO. **BRIDGEPORT ALUMINUM**

Aluminum Extrusion and Forging Facilities at Adrian, Michigan

Bridgeport Brass Company, Aluminum Division, Bridgeport 2, Connecticut • Offices in Principal Cities

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 26.00; ingots, 28.10, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 29.90; No. 43, 29.70; No. 195, 31.30; No. 241, 31.50; No. 356, 29.90, 30-lb ingots.

Antimony: R.M.M. brand, 99.5%, 33.00; **Lone Star brand, 33.50, f.o.b. Laredo, Tex.,** in bulk. Foreign brands, 99.5%, 27.50-28.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb deld.
Cobalt: 97-99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100-lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $120 per lb, nom.

Copper: Electrolytic, 27.00 deld.; custom smelters, 25.50; lake, 27.00 deld; fire refined, 26.75 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $86-110 nom. per troy oz.

Lead: Common, 13.30; chemical, 13.40; corroding, 13.40, St. Louis. New York basis, add 0.20.

Lithium: 98+%, 50-100 lb, cups or ingots $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $232-235 per 76-lb flask.

Molybdenum: Unalloyed, turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.o.b. Copper Cliff, Ont.

Osmium: $80-100 per troy oz, nom.

Palladium: $21-24 per troy oz.

Platinum: $81-87 per troy oz from refineries.
Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $10.50 per lb, commercial grade.

Silver: Open market, 90.625 per troy oz.

Sodium: 16.50, c.l.; 17.00 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot and prompt, 92.00.
Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max.), $2.25; grade A-2 (0.5% Fe max.), $2.00 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $3.50 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+% hydrogen reduced, $4.10-4.20.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.35; special high grade, 11.75 deld. Die casting alloy ingot No. 3, 14.25; No. 2, 15.25; No. 5, 14.75 deld.

Zirconium: Sponge, commercial grade, $5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.75-30.25; No. 12 foundry alloy (No. 2 grade), 21.75-23.00; 5% silicon alloy, 0.60 Cu max., 25.50-26.00; 13 alloy, 0.60 Cu max., 25.50-26.00; 195 alloy, 24.75-26.75; 108 alloy, 22.25-23.00. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.75; grade 2, 22.00; grade 3, 20.75; grade 4, 19.00.

Brass Ingot: Red brass, No. 115, 26.75; tin bronze, No. 225, 36.00; No. 245, 30.25; high-leaded tin bronze, No. 305, 30.75; No. 1 yellow, No. 405, 22.00; manganese bronze, No. 421, 24.50.

Magnesium Alloy Ingot: AZ63A, 40.75; AZ91B, 37.25; AZ91C, 40.75; AZ92A, 40.75.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.82, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.80, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 32.355; l.c.l., 32.98. Weatherproof, 30,000-lb lots, 33.66; l.c.l., 34.78. Magnet wire deld., 40.43, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $19.00 per cwt; pipe, full coils, $19.00 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $9.50-15.95; sheared mill plate, $8.00-11.50; wire, $7.50-11.50; forging billets, $6.00-7.60; hot-rolled and forged bars, $6.15-7.90.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.00-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strip, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100 and 3003 mill finish (30,000 lb base; freight allowed).

Thickness Range Inches	Flat Sheet	Coiled Sheet
0.249-0.136	43.10-47.60	....
0.135-0.096	43.60-48.70	40.50-41.10
0.095-0.077	44.30-50.50	40.60-41.30
0.076-0.061	44.90-52.80	40.80-42.00
0.060-0.048	45.60-55.10	41.40-43.10
0.047-0.038	46.20-57.90	41.90-44.50
0.037-0.030	46.60-62.90	42.30-46.30
0.029-0.024	47.20-54.70	42.60-47.00
0.023-0.019	48.20-58.10	43.70-45.40
0.018-0.017	49.00-55.40	44.30-46.00
0.016-0.015	49.90-56.30	45.10-46.80
0.014	50.90	46.10-47.80
0.013-0.012	52.10	46.80
0.011	53.10	48.00
0.010-0.0095	54.60	49.40
0.009-0.0085	55.90	50.90
0.008-0.0075	57.50	52.10
0.007	59.00	53.60
0.006	60.60	55.00

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.70	47.50
5050-F	43.80	48.60
3004-F	44.80	50.50
5052-F	45.40	51.20
6061-T6	46.90	53.00
2024-T4*	50.60	57.40
7075-T6*	58.40	66.00

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	78.20	75.20	....	....
0.156-0.172	66.20	63.40	....	....
0.188	66.20	63.40	....	81.60
0.219-0.234	63.00	61.50	....	....
0.250-0.281	63.00	61.50	....	77.90
0.313	63.00	61.50	....	74.20
0.344	62.50	....	....	....
Cold-Finished				
0.375-0.547	62.50	61.30	74.80	69.80
0.563-0.688	62.50	61.30	71.10	65.50
0.719-1.000	61.00	59.70	64.90	61.70
1.063	61.00	59.70	....	59.60
1.125-1.500	58.60	57.40	62.80	59.60
Rolled				
1.563	57.00	55.70	....	....
1.625-2.000	56.30	54.90	....	57.50
2.125-2.500	54.80	53.40	....	....
2.563-3.375	53.20	51.70	....	....

Forging Stock: Round, Class 1, 45.20-58.60 in specific lengths, 36-144 in., diam. 0.375-8 in. Rectangles and squares, Class 1, 50.50-66.60 in random lengths, 0.375-4 in. thick, width 0.750-10 in.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)		Nom. Pipe Size (in.)	
⅜	$19.40	2	$ 59.90
1	30.50	4	165.05
1¼	41.30	6	296.10
1½	49.40	8	445.55

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	45.40-47.00	60.60-64.80
12-14	45.70-47.20	61.30-65.80
15-17	45.90-47.90	62.50-67.50
18-20	46.50-48.30	64.50-70.10

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grade, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Thread plate, .188 in., 71.70; .250-2.00 in., 70.60. Tooling plates, .250-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)
Aluminum: 1100 clippings, 13.50-14.00; old sheets, 10.50-11.00; borings and turnings, 6.50-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	49.13b	46.36c	....	49.32	23.000	23.000	22.250
Yellow Brass	43.02	31.30d	43.56	45.93	17.375	17.125	15.750
Low Brass, 80%	45.50	45.44	46.04	48.31	19.500	19.250	18.750
Red Brass, 85%	46.37	46.31	46.91	49.18	20.250	20.000	19.500
Com. Bronze, 90%	47.78	47.72	48.32	50.34	21.000	20.750	20.250
Manganese Bronze	51.01	45.11	55.61	....	16.125	15.875	15.375
Muntz Metal	45.39	41.20	....	....	16.375	16.125	15.625
Naval Brass	47.27	41.58	54.33	50.68	16.125	15.875	15.375
Silicon Bronze	53.76	52.95	53.80	55.74e	22.625	22.375	21.625
Nickel Silver, 10%	59.43	61.75	61.75	....	23.625	23.375	11.813
Phos. Bronze, A-5%	68.07	68.57	68.57	69.75	23.750	23.500	22.500

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

7.00; crankcases, 10.50-11.00; industrial castings, 10.50-11.00.

Copper and Brass: No. 1 heavy copper and wire, 18.50-19.00; No. 2 heavy copper and wire, 17.00-17.50; light copper, 15.00-15.50; No. 1 composition red brass, 16.00-16.50; No. 1 composition turnings, 15.50-16.00; new brass clippings, 13.50-14.00; light brass, 9.50-10.00; heavy yellow brass, 11.50-12.00; new brass rod ends, 12.50-13.00; auto radiators, unsweated, 12.00-12.50; cocks and faucets, 12.50-13.00; brass pipe, 13.00-13.50.

Lead: Heavy 9.00-9.50; battery plates, 4.00-4.25; linotype and stereotype, 11.00-11.50; electrotype, 9.50-10.00; mixed babbitt, 10.50-11.00.

Monel: Clippings, 35.00-37.00; old sheets, 33.00-35.00; turnings, 24.00-25.00; rods, 35.00-37.00.

Nickel: Sheets and clips, 50.00-55.00; rolled anodes, 50.00-55.00; turnings, 45.00-50.00; rod ends, 50.00-55.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings, 16.50-17.50; 3003 clippings, 16.50-17.50; 6151 clippings, 16.00-17.50; 5052 clippings, 16.00-17.00; 2014 clippings, 15.50-17.00; 2017 clippings, 15.50-17.00; 2024 clippings, 15.50-17.00; mixed clippings, 15.00-16.00; old sheets, 13.00-13.50; old cast, 13.00-13.50; clean old cable (free of steel), 16.00-16.50; borings and turnings, 13.50-15.00.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 53.00; light scrap, 48.00; turnings and borings, 33.00.

Copper and Brass: No. 1 heavy copper and wire, 21.25; No. 2 heavy copper and wire, 19.75; light copper, 17.50; refinery brass (60% copper) per dry copper content, 19.00.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper and Brass: No. 1 heavy copper and wire, 21.25; No. 2 heavy copper and wire, 19.75; light copper, 17.50; No. 1 composition borings, 18.50; No. 1 composition solids, 19.00; heavy yellow brass solids, 13.00; yellow brass turnings, 12.00; radiators, 15.50.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.70 per lb.

Copper: Flat-rolled, 45.29; oval, 43.50, 5000-10,000 lb; electrodeposited, 35.75, 2000-5000 lb lots; cast, 36.25, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 110.50; 200-499 lb, 109.00; 500-999 lb, 108.50; 1000 lb or more, 108.00.

Zinc: Balls, 17.50; flat tops, 17.50; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.70 per lb in 100-lb drums.

Chromic Acid: 100 lb, 33.30; 500 lb, 32.80; 2000 lb, 32.15; 5000 lb, 31.80; 10,000 lb, 31.30, f.o.b. Detroit.

Copper Cyanide: 100-200 lb, 74.80; 300-900 lb, 72.80.

Copper Sulphate: 100-1900 lb, 14.55; 2000-5900 lb, 12.55; 6000-11,900 lb, 12.30; 12,000-22,900 lb, 12.05; 23,000 lb or more, 11.55.

Nickel Chloride: Less than 400 lb, 35.00; 400-9990 lb, 33.00; 10,000 lb, 32.50.

Nickel Sulphate: 5000-22,000 lb, 33.50; 23,000-35,900 b, 33.00; 36,000 lb or more, 32.50.

Sodium Cyanide: 100 lb, 27.60; 200 lb, 25.90; 400 lb, 22.90; 1000 lb, 21.90; f.o.b. Detroit.

Sodium Stannate: Less than 100 lb, 74.30; 100-600 lb, 65.20; 700-1900 lb, 62.50; 2000-9900 lb, 60.60; 10,000 lb or more, 59.30.

Stannous Chloride (anhydrous): Less than 25 lb, 163.50; 25 lb, 128.50; 100 lb, 113.50; 400 lb, 110.00; 5200-19,600 lb, 98.80; 20,000 lb or more, 86.60.

Stannous Sulphate: Less than 50 lb, 126.40; 50 lb, 96.40; 100-1900 lb, 94.40; 2000 lb or more, 92.40.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page* 133)

bearing scrap, with 18-8 sheets, clips and solids off $5 to $175-$185, and 18-8 borings and turnings down similarly to $75-$80. The straight chromium grades are steady.

Cleveland—Prices are off another $2 a ton on the leading steelmaking grades, but the list is nominal in the absence of representative buying. The blast furnace grades are holding. The cast iron grades also are unchanged. Further decline in prices is anticipated at the end of the month when automotive lists come out for bids. Auto tonnage tops estimates.

Youngstown — The local market continues weak, with no representative sales reported. One suburban dealer is reported to be shipping into Pittsburgh and Buffalo. He has a more favorable freight differential than Youngstown interests.

Material is piling up in dealers' yards, and all major mills are reported on the sidelines.

Buffalo—While scrap prices are being sustained temporarily by outstanding mill orders, the market outlook remains bearish. Continuation of the downtrend in prices into November is seen, unless demand this month improves sharply.

Mills are buying light tonnages. Foundries are ordering largely on an immediate consumption basis, though some shops producing pipe and furnaces are taking in fair tonnages of cast. Other shops, principally those serving the auto industry, are buying little.

The flow of scrap to yards has slowed down with the decline in prices. As a result, yards are fairly clean of material despite light consumer demand.

Detroit — Scrap dealers and brokers report only a couple minor buys were made last week. The market as a whole is expected to sink another dollar or two, with the turnings grades least stable. For the most part, prices are obscure and nominal in the absence of representative orders.

The industry doesn't expect to see a definite market trend emerge until around the first of the year when automakers will have to come to a decision on whether they'll stockpile cars in anticipation of a UAW strike.

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To act as Engineer and Production Manager steel fabrication plant in Southern town with 150 to 250 employees. At least five year's experience in metal field necessary. Ability to prepare bills of materials essential. Opportunity for advancement excellent. Write Box 607, STEEL, Penton Bldg., Cleveland 13, Ohio.

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Excellent opportunity for experienced Sales Manager with established contacts to handle sales of malleable and pearlitic castings for modern mechanized foundry located in midwest. Our employees know of this ad. Reply Box 606, STEEL, Penton Bldg., Cleveland 13, Ohio.

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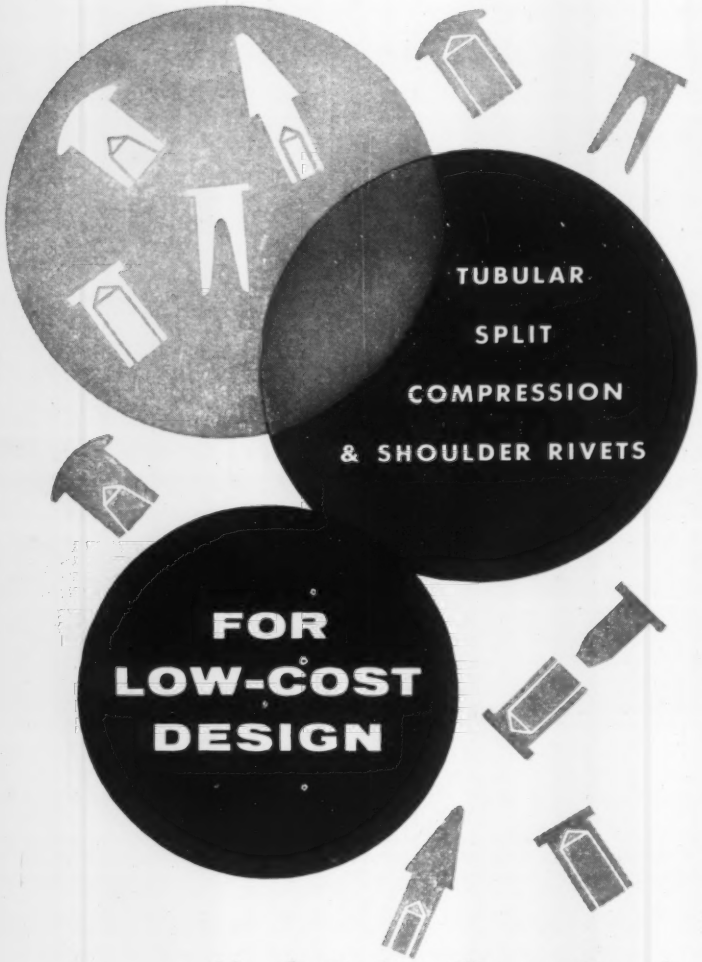
MECHANICAL ENGINEER, 43, graduate, 20 yrs. experience plant engineering, forward planning, design, specifications, new construction in seamless and welded tube mills and related plant facilities. Desires to relocate as dept. head or administrative assistant. Midwest or far west preferred. Appropriate responses acknowledged. Reply Box 602, STEEL, Penton Bldg., Cleveland 13, Ohio.

SALES ENGINEER, Tool Steel, Stainless and Specialty Steels. Fifteen years experience with one firm. New York and Connecticut territory preferred. Reply Box 605, STEEL, Penton Bldg., Cleveland 13, Ohio.



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. . . to take full advantage of automatic assembly
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Cincinnati—With new purchases lacking, the scrap market is drifting. Principal steelmaking grades are stable, but the cast grades have moved downward.

St. Louis — Scrap prices have been marked down another $6 a ton in some cases, reflecting continued sluggish demand and increasing supplies. Mill stocks are substantial.

Metal from rural and industrial sources is piling up at points of origin, but is not being offered.

Birmingham—Prices continued to drop last week, despite limited buying by some district steel mills and foundries. An Atlanta mill bought No. 2 heavy melting at $35, delivered.

Seattle—The scrap market here sustained another $3 a ton drop last week. No. 1 heavy melting fell to $35 and No. 2 heavy melting to $33.

Los Angeles — Mill buying of scrap is at a standstill. Dealers now think the fourth quarter will be about the slowest of the year.

San Francisco—Although scrap prices have declined about 20 per cent over the last three months, they are expected to go still lower before they begin to go up.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 129

Production of coke (oven and beehive) in August totaled 6,515,258 net tons, reports the U. S. Bureau of Mines. This compares with 6,501,266 tons in July, 1957, and 5,620,100 tons in August a year ago. Production in the first eight months amounted to 52,415,434 tons against 47,870,000 in the like period of 1956.

August output breakdown: 6,370,024 tons of oven coke, 145,234 tons of beehive. In July, oven output totaled 6,364,026 tons, beehive 137,240. In August, 1956, output was: Oven 5,504,700 tons, beehive 115,400. The eight-month total this year was: Oven 50,815,583 against 46,176,200 a year ago; beehive 1,599,851 tons against 1,693,800.

Producers' stocks of oven coke at the end of August amounted to 2,545,413 tons, equal to 12.2 days' production. This compares with 2,962,937 tons, equal to 15.7 days' production, at the end of August a year ago.

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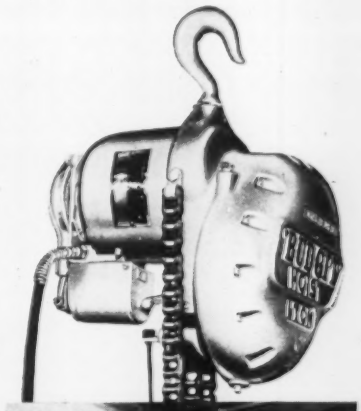

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In Constant Service For 15 Years

Three Interlocking Tramrail Cranes Keep Hardware Materials Moving

Floor-operated, push-button-controlled, completely motorized transfer cranes in open warehouse. The cranes run on three tracks supported by the wood trusses. A simple adjustment for leveling Cleveland Tramrail track makes it ideal for any building, especially wooden structures which are subject to sagging and shifting.

Excerpt from letter of Mr. Gilbert Schnitzer, Pres., Woodbury Hardware Company, Portland, Oregon.

". . . and if anyone should inquire of us as to service they have given us in the past 15 years, we shall be very happy to give him an excellent testimonial.

"The cranes have been in constant service since they were installed. The warehouse was first occupied by Woodbury & Co. for storage and distribution of steel plates, bars, structurals, and kindred items, and the cranes had heavy service for several years. The capacity of 3 tons, as you might imagine, was often exceeded, but the flexible suspension, plus the excellent material and construction of the bridge and sturdiness of the hoists, took care of these occasional overloads."

THREE 3-ton, 67'-0" long Tramrail cranes on parallel runways provide fast, efficient handling for a tremendous assortment of hardware materials at the Woodbury Hardware Co., Portland, Oregon. One crane covers a large open warehouse room, and the other two operate over a mezzanine storage. Two or three of the cranes can be interlocked, as required, to permit loads to be run from one to the other. Thus materials can be handled from any point on the mezzanine to any area in the open warehouse room directly without rehandling the loads.

The Tramrail system has meant so much in speeding handling and easing the work at Woodbury Hardware that they declare: "We could not get along without it."

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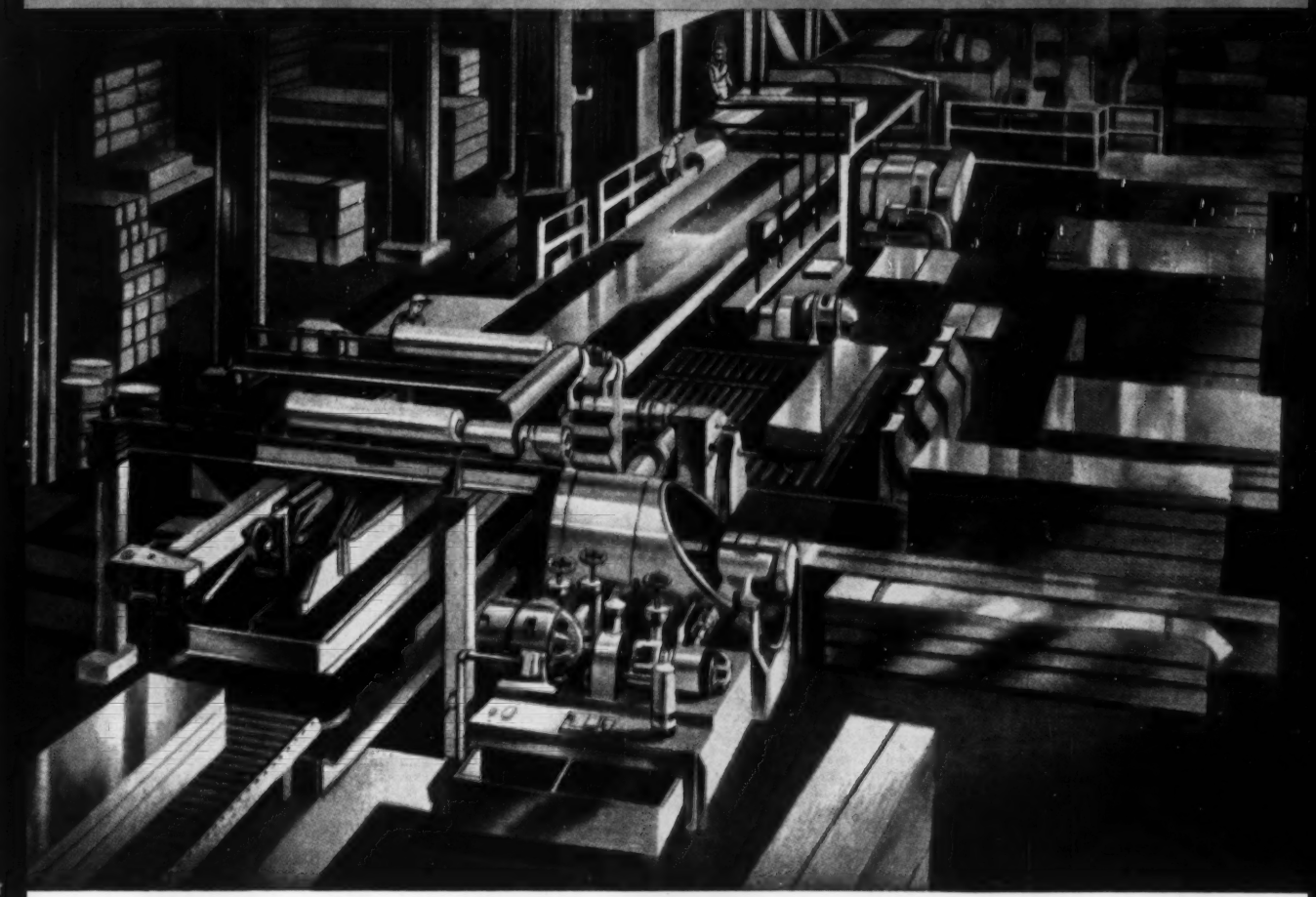

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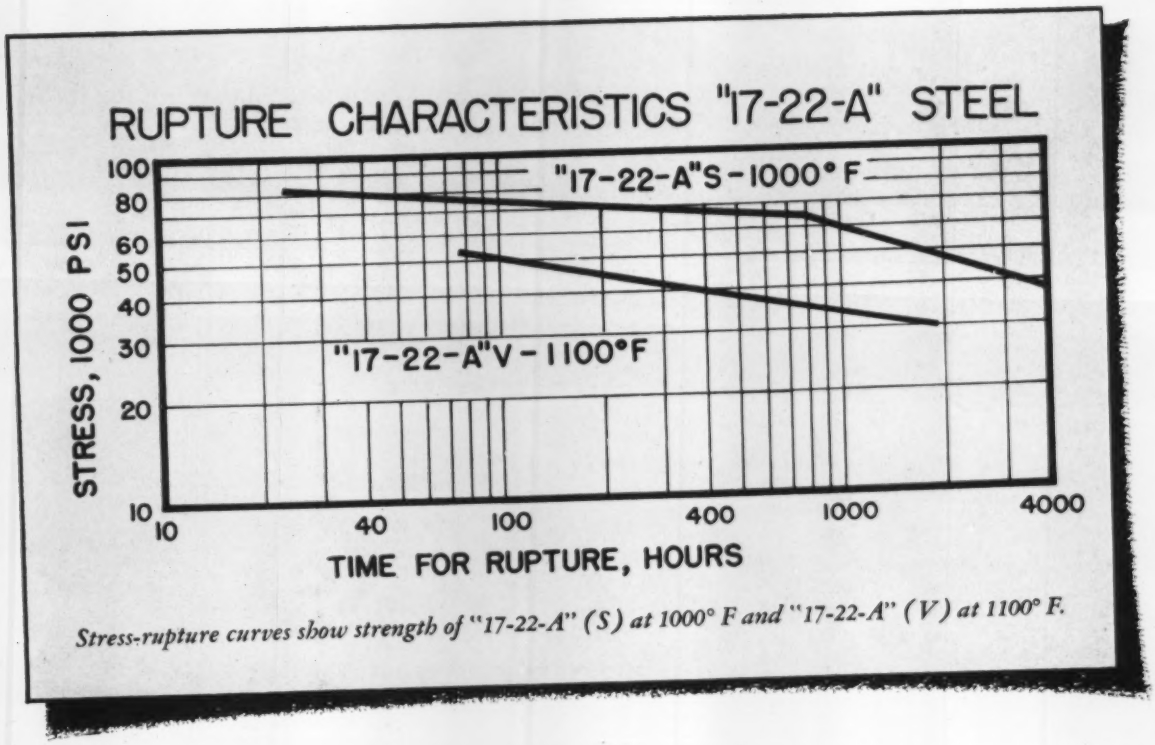

Stress-rupture curves show strength of "17-22-A" (S) at 1000° F and "17-22-A" (V) at 1100° F.

HOW MUCH ALLOY DO YOU NEED

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YOU don't have to use expensive high alloy steels to make airplane brakes, gas turbine or other parts that must operate at high temperatures. The Timken Company's "17-22-A"® steels, containing less than 3% alloy, give *high* alloy *performance* with maximum strength up to 1100°F. You cut costs, save strategic alloys.

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See the next Timken Televent hour, "The Innocent Years" over NBC-TV, Thursday night, November 21st.

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